PAPER
TRADE JOURNAL
Title Reg. U. S. Pat. Off.

Vol. 113, No. 1 Thursday, July 3, 1941 Price Ten Cents

Paper Mill Employment Higher This Year

Wisconsin Industrial Commission Reports Gain of 7.9 Per Cent In Workers In May Over Last Year — Paper Mills Benefit By Reservoir — Unemployment Benefits Decline — Other Mill News.

[FROM OUR REGULAR CORRESPONDENT]

APPLETON, Wis., June 30, 1941—Employment, payrolls and working hours have all been stepped up in Wisconsin mills, according to the May report of the Wisconsin Industrial Commission. There were 23,000 workers on the rolls, as compared to 22,900 in April and 21,300 in May a year ago. This represents an increase of 0.6% for the month, and 7.9% over May, 1940.

Payrolls for May totalled $664,000, as compared with $635,000 in April and $553,000 a year ago, a gain of 4.6% for the month and 19.9% over the same 1940 month.

Weekly wages now average $28.86, or 66.6 cents per hour, and the workers are putting in an average of 43.3 hours per week.

A slump is shown, however, in the converting and specialty plants in the Milwaukee metropolitan area. The number of workers in 19 plants reporting was 1,953 in May, a decline of 8.7% from the previous month. Payrolls were $50,548 per week for May, down 8.2%.

Average earnings were $25.88 per week for 41.5 hours in May, an average of 62.3 cents per hour.

Paper Mills Benefit By Reservoir

Paper mills along the Menominee River at Marinette, Wis., and Menominee, Mich., will benefit from the completion by the Wisconsin Michigan Power Company of the Michigamme storage reservoir, construction of which was started in June, 1940. It is a curved structure between two rock ledges, one of the few arch dams in that section of the country. It impounds waters of the Michigamme River, tributary to the Menominee River, and has a capacity of five billion cubic feet. The main dam is approximately 50 feet above the river bed. It creates a lake about ten miles long and three miles wide. The water impounded will be used to effect uniform flow during low water stages for the benefit of the utility's power plants and the paper mills along the Menominee.

Safety Contest on at Kimberly-Clark

Employees of the Badger-Globe mill of the Kimberly-Clark Corporation at Neenah, Wis., are engaged in a safety contest that gets at the causes of accidents as well as their occurrence. In addition to loss of points because of lost-time accidents and medical care cases, scoring is based upon sanitation, accumulations of dirt, equipment and building needing repairs, disorderly arrangements, failure to use guards, and others. Each department is scored according to a definite list of requirements, with 100 points possible. The Kimflex department is leading at the present time. The contest will run until the end of the year, and has run for two months without a lost-time accident. Some type of award will be offered the winners. James H. Kimberly is directing the contest, and is assisted by George Kronschnabel and heads of departments.

Unemployment Benefits Decline

Unemployment benefits paid to workers in Wisconsin have declined more than 300% during the last year, the Wisconsin Industrial Commission reports. Paper mills have drawn very little from their benefit reserves, and have their reserves in better shape than at any previous time. Some have sufficient funds on hand so they are not required to pay any further assessments on payrolls. Under the Wisconsin law, the payments are credited direct to each contributor and benefits are drawn against his account when any of his employees are laid off. More than 1,000 industries have reduced their contribution requirements to zero. The May benefits paid this year were lower than at any time since May, 1937.

On the other hand, the addition of workers and the resumption of production on idle machinery has caused a sharp increase in accidents, with the paper mills included in the list. The industrial commission reports that injuries reportable under the Workmen's Compensation Act were 50% higher in May of this year than in May, 1940. The number of workers subject to the act increased 15% in the same period. The total number of injury reports in the state in May was 2,408, as compared with 1,651 in May, 1940.

Among the causes listed are "the employment of

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Abitibi Bondholders Will Defend Rights

Recommendations of Royal Commission Fails To Properly Provide For Bondholders, Chairman of Protective Committee Declares — New Tax Laws Brings New Capitalization Plan — Other News.

[FROM OUR REGULAR CORRESPONDENT]

TORONTO, Ont., June 30, 1941—The bondholders' protective committee for the Abitibi Power and Paper Company, Ltd., have declared their intention to stick to the defense of their rights in opposition to the recommendations made by the royal commission as announced some time ago.

In a statement issued by H. J. Symington, chairman of the bondholders' protective committee, he says: "The committee has unanimously concluded that the plan suggested in the report does not reasonably recognize or provide for the interests of the bondholders, and that the committee cannot recommend it to the bondholders for their approval."

The committee has been advised by counsel that the Abitibi Power and Paper Company, Ltd., Moratorium Act, 1941, which stayed proceedings on the order of sale, is invalid since it infringes on the jurisdiction of the Dominion government over insolvent companies. The present intention of the company is, therefore, to continue to defend the rights of the bondholders.

Plan For Capitalization Being Considered

New tax laws have changed completely the committee's plans for capitalization of a new company in common stock. It now has under consideration a plan for capitalization of a new company partly in bonds and partly in common stock. These would be distributed rateably to assenting bondholders only as it is felt there is no value or equity available for the shareholders over and above the company's indebtedness to its bondholders. It is maintained that in this latter circumstance the Abitibi property belongs to its bondholders and that the trust deed and mortgage executed by the company vests in the bondholders the full right to require a sale of the property.

Pulp Requires Export Permit

An announcement from Ottawa this week extends by order-in-council the list of commodities which may not be exported to any country without a permit and includes, among a variety of products, wood pulp.

The order announced by Trade Minister MacKinnon Monday placed on the additional list requiring export permit, various animal and vegetable oils and fats, Pacific salmon, Pacific herring, cordage and twine, wood pulp, certain construction machinery, flax machines, manufactures of zinc, pigments, carbon electrodes, cryolite, fluorspar, a number of chemicals and rubber tires and tubes.

Pulpwood Exports Show Gains

Pulpwood contributed 4.4% of the total exports from Canada during May and gained 115% over May of last year, while wood pulp, representing 4.3% of all exports, increased 35%.

M. and O. Receivers Out July 9

Notice has been given that on July 9 there will be held a court hearing for the discharge of the receivers of Minnesota and Ontario Paper Company, after approval of their expenditures. Thus, with the plan approved and out of the way, it may be expected that the exchange of old for new certificates will be carried out shortly.

The United States district court in Minneapolis will hear an application for allowances of compensation for services rendered and reimbursement for costs and expenses incurred in the administration and reorganization of Minnesota and Ontario Paper Company, totalling $726,939, at the same time (July 9) as it hears a petition of the trustees. This will report a consummation of the amended plan of reorganization and will ask for the approval and allowance of trustees' final accounts and a final decree discharging trustees and closing the estate.

Buys Paper Under Walsh-Healey Act

[FROM OUR REGULAR CORRESPONDENT]

WASHINGTON, D. C., July 2, 1941—During the week ended June 14, the government bought $561,174 worth of paper under the Walsh-Healey act with the following orders:

$20,998 worth of book paper for the Government Printing Office from Frank Parsons Paper Company; $12,894 worth of paper napkins for the D. C. Veterans Administration from Charles G. Scott & Co.; $22,504 worth of mimeograph paper for War Department, Air Corps from Walker Goulard Plehn Company; $42,472 worth of mimeograph paper for War Department, Air Corps, from Mathers-Lamm Paper Company; $26,149 worth of mimeograph paper from the Whitaker Paper Company; $25,875 worth of fibre containers for War, Ordnance, Philadelphia, from Cleveland Container Company; $11,619 worth of fillers and pads for War, QMC, Texas, from Graham Paper Company; $56,405 worth of stencil paper for War, QMC, Brooklyn, from Marr Duplicator Company; $85,114 worth of stencil paper for War, QMC, Brooklyn, from Polychrome Company; $204,820 worth of stencil paper for War, QMC, Brooklyn, from A. B. Dick Company; $10,056 worth of files, pads, for War, QMC, California, from Zellerbach Paper Company; $13,245 worth of toilet paper for War, QMC, Texas, from Ashland Paper Mills; $29,020 worth of bond paper for War, QMC, Texas, from Paper Corporation of U. S.

Gehrke Joins Foxboro at New York

The Foxboro Company, manufacturers of industrial instruments for measurement and control, announces the addition of Erwin Lawrence Gehrke to the staff of sales engineers, attached to the New York branch. Mr. Gehrke, a graduate of Harvard University Engineering Courses, has had a varied experience which should prove valuable to The Foxboro Company customers in the industrial area along the Atlantic seaboard.

Paper Demand Heavy in Midwest Territory

Current Market Quotations On All Grades of Paper and Paper Products Very Firm Under Continued Increasing Orders — Midwest Salesmen Entertain I. P. I. Officials and Hold Golf Outing.

[FROM OUR REGULAR CORRESPONDENT]

CHICAGO, Ill., June 30, 1941—The Chicago paper market wound up the final week of June without any appearance of summer slackening. On the contrary, mills in virtually all lines were reported to be dropping back further in the race to keep up with a spirited demand from all parts of this particular sales territory. Prices were very firm and although no further advances were reported in the week the list was along the top in every respect. Books and covers were reported to have made noticeable gains while krafts were likewise very strong. Bonds were up to top figures in all grades according to local offices. Groundwoods were very strong and newsprint markets remained firm. Waste papers held well at the prices established June 1. Specialties were likewise very firm. The market itself was orderly and there is evidence on every hand that the industry to do a good job of self-regulation as opposed to any price control under Government hands.

Salesmen Entertain IPI Officials

The western division of the Salesmens Association of the Paper Industry took the spotlight this week as far as Chicago news is concerned. On Monday, June 23, the Association held "open house" with executives of the International Printing Ink Company as its guests. With Courtney Reeves, western vice-president, in charge of the meeting, the more than one hundred members and guests viewed a talking movie produced by the International Printing Ink Company which reviewed the manufacture of ink and likewise pictorially pointed out many new innovations in printing ink manufacture which are of direct interest to the paper trade. Following the moving picture, members and guests of the Associations developed a round table discussion of printing ink and its relation to paper and its uses. Present to explain the movie and to participate in the discussion were Roger Smith, vice president and western manager of the International Printing Ink Company; Sherman Ruxton, Chicago manager, and Jack Jeuck, western production manager of the well known concern. It was, according to those present, one of the most interesting and instructive meetings of its kind ever sponsored by the Salesmens Association of the Paper Industry.

Enjoy Second Golf Outing

Forty-eight members and guests participated in the second of the summer series of golf outings sponsored by the western division of the Salesmens Association of the Paper Industry which was held at the Park Ridge Country Club on Friday, June 20. Under the guidance of Ed Rolaine, golf chairman, the half a hundred golfers enjoyed an informal luncheon, golf and dinner session in the evening. Prize winners were as follows: low gross, Frank Haggerty, Haggerty Paper Company; blind bogey, R. A. Strindmo, Minnesota and Ontario Paper Company; low net them as exceeding their individual quotas. (17 handicap and under), Ed Dahl, Rhinelander Paper Company; low net (18 and over), Bob McDowell, Moser Paper Company; second and third low nets (18 handicap and over), T. S. Hodgson, Union Bag and Paper Company, and George Mueller, Zellerbach Paper Company; low net (first nine holes), W. McCarty, Millprint Company, Milwaukee; low net (second nine), T. S. Hodgson; low putts (first nine), Dan Quirk, Peninsular Paper Company; low putts (second nine), Ray George, Tomahawk Paper Company; high gross foursome, A. Selle, Butler Paper Company; C. Nelson, R. Ewalt and B. St. Clair, all of the same firm. Low putt foursome honors went to H. B. Donaldson, Munising Paper Company; E. F. Melia, Union Bag and Paper Corporation; R. E. George and T. S. Hodgson. Low net foursome honors were won by G. Clifford, Bermingham & Prosser; G. Mueller, J. W. McAllister, James White Paper, and Courtney Reeves, Allied Paper Mills.

Benj. Volk Win in N.P.T.A. Contest

The contest committee of the National Paper Trade Association is pleased to announce the winners of the National awards in the Paper Trade Parade Sales Campaign recently conducted. The winner of the first prize award, which is an all-expense trip to the annual convention of the N.P.T.A., is Benjamin Volk, H. J. Dowd Company, Inc., Cambridge, Mass.

The sectional winners in the campaign, each of whom will receive a gold "National Paper Trader" button are as follows:

George Neff—Quaker City Paper Company—Philadelphia, Pa.

Gordon G. Lyford—D. F. Munroe Company—Boston, Mass.

George W. Urwick—Parker Paper Company—Gastonia, N. C.

James W. Murphy—Carter Rice & Company—Portland, Ore.

Henry D. Gadbois—Tri-State Paper Company—Cumberland, Md.

J. F. Porter—Wilcox-Mosher-Leffholm Company—Minneapolis, Minn.

Leon Nack—A. E. MacAdam & Co.—Brooklyn, N. Y.

R. R. Murphy—Peterson Paper Company—Davenport, Iowa.

Charles A. Schuman—The Bouer Paper Company—Milwaukee, Wis.

R. J. Holderness—Capital City Paper Company—Springfield, Ill.

C. P. Tatum—Louisville Paper Company—Louisville, Ky.

D. L. Jones—Roach Paper Company, Little Rock, Ark.

The campaign proved to be very successful as evidenced by the fact that over fifty per cent of the salesmen entered in the campaign received the bronze "National Paper Trader" buttons which designated

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inexperienced workers, increased working hours, work on a two and three shift basis, the increased use of old machines and equipment, crowded work rooms, an insufficient number of supervisory personnel, and the general nervous tension over world conditions."

More Power For Paper Mills

Permission has been granted the City of Kaukauna, Wis., by the Wisconsin Public Service Commission to install a new generator in its municipal hydro-electric plant, in order to take care of the increased power demands of the Thilmany Pulp and Paper Company and the Combined Locks Paper Company.

Contracts were awarded immediately for the purchase of a vertical electrical generator with a capacity of 3,000 KVA and an exciter, a vertical hydraulic turbine of not less than 3,300 H.P. at a head of 22 feet, and for 56,782 pounds of structural steel for the building to house the equipment.

The generator and exciter contract was awarded to the Electric Machinery Manufacturing Company of Minneapolis on its low bid of $41,795. The S. Morgan Smith Company, York, Pa., was granted the turbine contract on a bid of $58,000. The steel contract went to Vulcan Manufacturing Company, Fond duLac, Wis. Total cost of the project is estimated at $190,000.

Deed Transfers Lands in Menominee

By virtue of a deed filed last week in the register of deeds office at Menominee, Mich., the Southern Kraft Corporation, a Delaware corporation, has transferred to the Southern Kraft Paper Corporation, a New York corporation, certain lands located in Menominee. The deed covers all the premises deeded in 1937 to the Southern Kraft Corporation by the Continental Paper and Bag Company, a bankrupt firm. Certain properties were exempted in the deed, including property in a 1940 deed from the Southern Kraft Corporation to the Union Falls Power Company embracing two power dams.

Bonifas Buys Forest Land

The Bonifas Lumber Company, subsidiary of the Kimberly-Clark Corporation, Neenah, Wis., has purchased 16,080 acres of forest land in Menominee and Dickinson Counties of Michigan from the Wisconsin Land and Lumber Company of Hermansville, Mich. F. J. Sensenbrenner, president, declared that the timber will be held as a reserve supply to protect the mills because of the limited pulpwood supply.

Thilmany Employes Honored

At a banquet Friday evening, June 27, 81 employes of the Thilmany Pulp and Paper Company, Kaukauna, Wis., were presented with pins honoring them for having 25 years or more of service with the company. Five of these were given gold watches because of forty or more years of service. These men were Benjamin Rademacher, Otto Minkebige, Otto Doering, Fred Goetzman and Mike Gerhartz. The presentations were made by C. R. Seaborne, vice-president, on behalf of the management.

A resolution was adopted commending C. W. Stribley, a director of the company, for 44 years of service. The resolution was solicitous of his recovery from an illness which prevented him from attending.

The employes who received the pins will be known as the Quarter Century Club.

Paper Mills Cut Use of Chlorine

Writing paper manufacturers of Neenah, Menasha and Appleton, Wis., are cutting down their consumption of chlorine as much as possible. This was done in a move for voluntary cooperation with the government to permit priority use of the chemical in defense production.

Truck Fleet Has Perfect Safety Record

The truck fleet of the Thilmany Pulp and Paper Company, Kaukauna, Wis., has placed for the 10-month period from July 1, 1940, to April 30, 1941, in the National Safety Council contest for small fleets in the private city trucking group, according to L. C. Smith, personnel director. The fleet has travelled 86,000 miles without an accident in this period. Twenty-two fleets are entered in the contest, which closes July 31, 1941.

Shattuck-Merrill Nuptials

James Harwood Shattuck, son of Mr. and Mrs. S. F. Shattuck of Neenah, Wis., and Miss Martha Merrill of Cambridge, Mass., were married Wednesday afternoon, June 18, at Cambridge. Mr. Shattuck was graduated this month from Tufts College, Medford, Mass., and will be employed at the Kimberly, Wis. mill of the Kimberly-Clark Corporation, of which his father is vice-president.

Want Duty Reduced on Casein

[FROM OUR REGULAR CORRESPONDENT]

WASHINGTON, D. C., July 2, 1941—Support for import duty reductions proposed on casein from Argentina and Uruguay were urged before the Committee on Reciprocity Information by a committee representing coated paper manufacturers.

The committee took testimony on a proposed trade agreement with the South American countries in which the casein duty is lowered.

Those testifying in support of the cut were Holley R. Cantine of Martin Cantine Company and H. C. Bradford of Rex Paper Company.

Paper Shipments to Rise

The paper industry of the Great Lakes will experience an increase of 15.5 per cent in carload shipments during the third quarter of this year, as compared to the corresponding period of last year, according to estimates made by Charles H. Winslow, traffic manager of the Kalamazoo Chamber of Commerce.

Watervliet Advances Wages

The Watervliet Paper Company, Watervliet, Mich., manufacturer of book paper, recently has advanced the wages of employees in all departments of mill, providing for a general increase of 5 cents per hour. About 400 persons are affected.

Obituary

Herman R. Harrigan

Herman R. Harrigan, general manager of the District of Columbia Paper Mills, Inc., Washington, D. C., died early June 26, after a lingering illness of several months.

He is survived by his widow, Selina Richards Harrigan, three sons, Herman R., Jr., Richard and Robert; also his mother, Mrs. Essie Woods Harrigan, a sister, Emily, and brothers, Alfred and Wesley.

He was born January 20, 1885, in Lafayette, Pa. His early business life was with the Pusey & Jones Corporation, Wilmington, Del., for whom he sold paper mill machinery in the United States and Europe. He was with the District of Columbia Paper Mills, Inc. from 1917 to 1919. After that he spent eight years as production manager for the American Writing Paper Company, Holyoke. He returned to the District of Columbia Paper Mills, Inc., in 1926 and had been general manager for several years.

Mr. Harrigan came from a paper making family, as his father was a well known paper maker in his time. Mr. Harrigan contributed much to the paper industry through the invention of smoothing press equipment, knotless Jordan fillings, and was also inventor of a coating machine process. All of these inventions are in use.

Hyatt M. Garrison

Hyatt M. Garrison, secretary and treasurer of The John W. Higman Company, 24 State street, New York, died at his home in Great Neck, L. I., on June 19, 1941.

Mr. Garrison had been with The Higman Company since 1917, and was the son of E. H. Garrison, who was president of the company for a number of years, the Higman company being importers of English china clays.

Mr. Garrison is survived by his wife, Winifred, his brother, Edmund Everett and his sister, Olive.

Funeral services were held at his home on June 21, 1941. Interment was at Oakland Cemetery, Yonkers, N. Y.

Simplified Practice for Insulation

The recently proposed Simplified Practice Recommendation for Structural Insulating Board, has been accorded the required degree of acceptance by manufacturers, distributors, architects, building contractors, and others affected, and his been approved for promulgation, according to an announcement of the Division of Simplified Practice, National Bureau of Standards. The schedule will be identified as "Simplified Practice Recommendation R179-41, Structural Insulating Board (Vegetable Fiber)," effective from June 1, 1941.

This recommendation covers information concerning sizes, thicknesses, colors, finishes and the treatment of edges of structural insulating board.

Until printed copies are available, free mimeographed copies of this Simplified Practice Recommendation may be obtained upon request to the Division of Simplified Practice, National Bureau of Standards, Washington, D. C.

Low Water Handicaps Mills

[FROM OUR REGULAR CORRESPONDENT]

WATERTOWN, N. Y., June 30, 1941—The continued drought of the past several weeks has decreased the flow of water in power producing streams in this section but despite this there is reported an upward trend in industrial conditions which tends to consume more power. So far no indication of a power shortage is visible. It was stated that virtually all of the paper manufacturing plants along the Black River are now buying power which is necessary because their own power plants cannot operate to full capacity because of the low flow of water. Power companies through studies and surveys have established their power development units in such a manner as to handle not only the current demands but also any demands which might result from the unforeseen emergency.

In the Glens Falls section it was reported that a number of paper mills were experiencing difficulties because of low water conditions. The depth of water in the huge Sacandaga Reservoir, constructed several years ago for the benefit of paper mills, is the lowest in its history because of the absence of rains. Despite this condition the reservoir is supplying enough current to keep many paper mills hereabouts in operation. Grinders at one of the large Corinth mills were forced to shut down recently because of the poor current and similar conditions are being felt elsewhere. The huge Sacandaga Reservoir, however, is again proving its worth in enabling mills to keep running despite the drought and has been instrumental in saving considerable for mill owners. The reservoir is under state control and was constructed at a cost of about $12,000,000.

To Expand Sulphite Pulp Production

Increased export of sulphite pulp to the United States from British Columbia is foreshadowed with announcement by the Powell River Company that immediate work will start on construction of additions to the sulphite pulp mill at Powell River.

Expenditures, the company said, will amount to nearly $1,000,000.

The announcement here followed advices from Ottawa that the Dominion Government has allowed the company special depreciation allowances for three years, during which time, it is estimated, a $3,750,000 of United States money will come into Canada through the increased pulp export.

"The extension," company officials said in making the announcement, "will enable the company to bring its production of high-grade pulp up to 100 tons per day.

"The bulk of this new product will be exported to the United States."

Excelsior Paper Stock Co. Burned

[FROM OUR REGULAR CORRESPONDENT]

VANCOUVER, B. C., June 30, 1941—Fire completely gutted the plant of the Excelsior Paper Stock Co., 1531 Main Street, Vancouver, B. C., recently. Damage was estimated at approximately $50,000. Two of the company's trucks were destroyed and several vehicles were badly damaged before being towed out of the blazing building. According to G. A. Healey, manager of the firm, the loss is partially covered by insurance.

CONSTRUCTION NEWS

Mount Holly Springs, Pa. — The Schweitzer Paper Company, an interest of Peter J. Schweitzer, Inc., 994 Newark avenue, Elizabeth, N. J., manufacturer of cigarette papers, carbon papers, thin bond stocks, etc., has taken over the former mill of the Mount Holly Paper Mill, Mount Holly Springs, and will remodel and improve for new branch mill. Expansion is planned in present structures to provide additional floor space. Entire project is reported to cost over $100,000, including equipment. Work is scheduled to be placed under way at once.

Cornell, Wis. — The Cornell Wood Products Company, manufacturer of wall board, folding box board, wood pulp board, etc., has approved plans for alterations and improvements in mill. General contract has been let to Hoeppner-Bartlett Company, 631 East Madison street, Eau Claire, Wis., and work will proceed at early date. No estimate of cost announced.

North Bergen, N. J.—The Grand City Container Corporation, 622 West 57th street, New York, N. Y., manufacturer of corrugated boxes and containers, has asked bids on general contract for erection of proposed new plant on Highway Route No. 1, North Bergen, where tract of about 12 acres of land was acquired a few weeks ago, as previously reported in these columns. Construction award will be made soon. New plant will consist of a main one and two-story and basement structure, 300 x 800 feet, designed for large capacity under straight line production. Company will remove present plants at Brooklyn and New York to new location, where production for the metropolitan district will be concentrated in future. Cost reported about $750,000, including equipment. Ely Jacques Kahn and Robert Allan Jacobs, 2 Park avenue, New York, N. Y., are architects.

Belleville, N. J.—The American Tag Company, 113 Sussex avenue, Newark, N. J., manufacturer of shipping tags, labels and other paper specialties, has concluded arrangements for the purchase of former factory of the Overman Cushion Tire Company, manufacturer of automobile tires, at Rutgers and Courtland streets, Belleville. Property consists of a main one-story building, totaling about 35,000 square feet of floor space, on tract of about 2½ acres of land. New owner will take over at once and will improve and equip for new plant, providing facilities for large capacity. Main offices of company are at 6153 South State street, Chicago, Ill.

Manchester, Conn.—The Lydall & Foulds Paper Company, Inc., Main street, manufacturer of chip board and other paper specialties, has approved plans for extensions in boiler house at mill. Award for erection of new addition has been let to Knofla Brothers, Inc., 875 Main street, Manchester, and work will be placed under way at once. Additional equipment will be installed for increased capacity. No estimate of cost announced.

Philadelphia, Pa. — The Independent Paper Box Company, 2430 North Third street, manufacturer of set-up paper boxes and other paper containers, has leased a floor in local industrial building at 1512-14 Callowhill street, and will occupy for expansion.

Polson, Mont. — L. A. DeGuerre, Wisconsin Rapids, Wis., paper mill engineer, is completing surveys and estimates of cost for proposed new pulp and paper mill at Polson, previously referred to in these columns, to be constructed and operated by a new company. It is understood that bids for construction will be asked late in the fall and that actual erection will begin around the close of this year. New mill will consist of a group of one and multi-story structures, with power house, pumping station and miscellaneous operating structures, and is reported to cost over $2,500,000, with machinery. J. E. Busey, L. L. Marsh and Lloyd Helmer, all of Polson, are interested in project. T. R. Delaney, Polson, attorney, is representative for new organization. The Polson Chamber of Commerce is active in the development.

Rochester, N. Y.—The Eastman Kodak Company, Kodak Park, manufacturer of processed photographic papers, films, etc., has completed plans for new addition to plant, to be four-story, about 96 x 200 feet, reported to cost close to $400,000, including equipment. Contract for erection has been awarded to A. W. Hopeman & Sons Company, 569 Lyell avenue, Rochester, and work will be placed under way at once.

Niagara Falls, N. Y.—Fire recently damaged a portion of mill of W. Ralston & Company, Inc., 921 Whirlpool street, manufacturer of waterproof paper stocks. An official estimate of loss has not been announced, but is reported as slight. The damage will be replaced.

Chester, Pa.—The new addition to mill of Scott Paper Company, Chester, manufacturer of tissue paper products, recently referred to in these columns, will be used primarily for expansion in paper towel-manufacturing division. It will comprise two additional floors to present one-story finishing mill, about 48 x 200 feet, approximating 51,000 square feet of additional floor space. Cost is estimated at close to $200,000, with equipment. Erection contract has been awarded to David M. Hunt, 1700 Sansom street, Philadelphia, Pa., and completion is scheduled early in November. Plans for new structure were prepared by Stone & Webster Engineering Corporation, 49 Federal street, Boston, Mass., which will supervise erection.

Vancouver, B. C.—Fire recently destroyed a portion of plant of the Excelsior Paper Stock Company, Ltd., paper products, with loss reported over $60,000, including building and equipment. It is planned to rebuild.

Nitro, W. Va.—The American Viscose Corporation, Delaware Trust Building, Wilmington, Del., manufacturer of viscose rayon products, has completed construction of a new experimental plant at branch mill at Nitro, for production of staple fiber, and will place in service at once. It will be used as a pilot mill for investigation and study of all phases of staple fiber manufacture, and on full production schedule will have a capacity of about 2,000,000 pounds per annum. The mill is housed in a separate building, entirely apart and independent of regular plant operations, with machinery and equipment for

processing so arranged as to be adaptable for any change as may be desired.

New Companies

Brooklyn, N. Y.—The Dumont Paper Products Corporation has been incorporated with capital of $20,000, to manufacture and deal in paper goods of various kinds. New company is represented by Michael Popper, 475 Fifth avenue, New York, N. Y., attorney.

Wethersfield, Conn. — The Paper Cup and Specialty Company, 12 Middletown avenue, has filed notice of company organization to manufacture and deal in paper cups, plates and allied products. J. H. Schwarz is head.

New York, N. Y.—The Green-Kriegsman Paper Company, Inc., has been chartered with capital of $50,000, to deal in paper products of various kinds.

Los Angeles, Calif. — The Brown Envelope Company, 462 East Third street, has filed notice of company organization to manufacture and deal in commercial envelopes and allied paper goods. Arthur Brown is head.

New York, N. Y.—The Lignum Manufacturing Corporation has been chartered with capital of $10,000, to manufacture pulp and paper products. New company is represented by John M. Crane, 220 Broadway, New York, attorney.

Milwaukee, Wis.—Fine Paper Association of Wisconsin, Inc., has been organized to engage in association activities for certain pulp and paper mills in the State. Incorporators include Mason B. Olmstead, and Curtis W. Boyce, 1832 North 81st street, Milwaukee.

Detroit, Mich.—The Peerless Paper Products Company has been incorporated with capital of $5,000, to deal in paper goods of various kinds. New company is represented by Thomas L. Dunn, 862 Maccabees Building, Detroit, one of the incorporators.

New York, N. Y.—Ceco Envelope Corporation has been incorporated with capital of 100 shares of stock, no par value, to manufacture and deal in envelopes and other commercial paper products. New company is represented by Isidore Paley, 170 Broadway, New York, attorney.

Chicago, Ill.—The Bierdeman Paper Box Company, Inc., 606 North Oakley boulevard, has been chartered with capital of $10,000, to take over and succeed to the Bierdeman Paper Box Company, same address, manufacturer of paper boxes and containers, folding boxes, etc. The incorporators include E. A. and L. L. Bierdeman.

Sell Red Mill Board Co. Equipment

The J. J. Ross Company, 250 Frelinghuysen avenue, Newark, N. J., which makes a specialty of buying and selling everything for the paper and pulp industry, announces that it has just sold the entire paper mill equipment of the plant owned by them at Montville, Conn., and formerly known as the Red Mill Board Company, to the Pacific Paperboard Company at Longview, Wash. The equipment is being dismantled and will be reassembled at the plant of the purchaser. The machine sold consisted of a 5-cylinder 68-inch paper machine and auxiliary equipment. The Pacific Paperboard Company, which at present has an 84-inch machine, will now have two machines at its mill.

TAPPI Meeting in Educational Center

"Back to college" for members of the Technical Association of the Pulp and Paper Industry in September. For the first time a university will house a fall meeting of the association. This will be at Ann Arbor, Mich., on September 16-19. Those attending will live in the residence halls used by the students from September until June. The commodious and attractive facilities of the University of Michigan, the Alma Mater of so many TAPPI men will be at the disposal of the convention. Although these accommodations are not the same as a hotel, in many respects they will be better and more than the usual opportunity will be provided to enable those who attend to become much better acquainted because of the enormous capacity and comfort provided by the public rooms ordinarily used by the great University of Michigan student body.

Ralph A. Hayward, president of the Kalamazoo Vegetable Parchment Company and general chairman of the meeting has arranged an unusual and interesting program that will reflect the present trend of the times and their relation to the paper industry. Of particular interest to mill managers will be the general sessions devoted to the paper industry in the national defense program, paper price control through the Office of Production Management, international economy, employee relations and industrial research.

A number of group luncheons will provide an opportunity for the discussion of practical mill operating problems such as coating, surface sizing, pigments, bleaching, engineering, papermaking, etc. A number of papers featuring some of the newest developments will feature these discussions. There will also be a number of nontechnical addresses for the benefit of those who may not be interested in the specific subjects discussed at the luncheon sessions.

Full advantage will be taken of the wonderful sport facilities of the University such as golf, skeet shooting, tennis, riding, swimming. There will be an opportunity to watch the University of Michigan football team in practice. Plans are under way to hold a softball tournament for the TAPPI sections.

The ladies who attend will have a fine program. Instead of the usual card party type of program, lectures will be given on gardens, psychiatry, student life, book reviews and travel talks. These will be followed by afternoon teas attended by the wives of the members of the University staff.

Following the main three day session all will be taken to the now famous Greenfield Village to see the Ford Museum and to have luncheon at the Dearborn Inn. The men will have an opportunity to go through the Ford plant and possibly the Chrysler Research Laboratories.

Reservations are beginning to arrive. These should be made with Charles A. Fisher of the Department of University Extension, University of Michigan, Ann Arbor, Mich. The rate for single rooms is $1.75 and for double $2.50. The cost of meals will be correspondingly low.

H. D. Stillman Speaks

BOSTON, Mass., June 30, 1941—H. D. Stillman, of the Nashua Gummed and Coated Paper Company, Nashua, N. H., was a speaker at the annual conference of the National Office Management Association recently held at the Hotel Statler.

FINANCIAL NEWS

New York Stock Exchange

High, Low and Last for Week Ending July 2, 1941

	High	Low	Last
A. P. W.	....	....	....
Armstrong Cork Co.	29¼	27¼	29¼
Celotex Corp.	9⅜	9⅛	9⅛
Celotex Corp., pf.	70¼	70	70
Certain-Teed Products Corp.	3¼	3⅛	3⅛
Certain-Teed Products Corp., pf.	30	28¼	30
Champion Paper & Fibre Co.	....	....	....
Champion Paper & Fibre Co., pf.	103	102½	102½
Congoleum-Nairn Co.	16¾	16	16
Container Corp. of America	16¼	15¾	15¾
Continental-Diamond Fibre Co.	8	8	8
Crown-Zellerbach Co.	12⅜	12	12¼
Crown-Zellerbach Co., pf.	86	85¾	86
Flintkote Co.	13½	12⅞	13½
Robert Gair	2¼	1⅞	2
Robert Gair, pf.	9⅜	9⅛	9⅛
International Paper & Power	15⅛	14½	14¾
International Paper & Power, pf.	66	65	66
Johns-Manville Corp.	64	63¾	64
Johns-Manville Corp., pf.	125	125	125
Kimberly Clark Corp.	....	....	....
MacAndrews & Forbes	28	28	28
MacAndrews & Forbes, pf.	134	134	134
Masonite Corp.	22½	22	22¼
Mead Corp.	8½	8½	8½
Mead Corp., pf.	....	....	....
Paraffine Companies, Inc.	28¼	28¼	28¼
Paraffine Companies, Inc., pf.	99	99	99
Rayonier, Inc.	13	12⅞	13
Rayonier, Inc., pf.	24⅝	24⅜	24⅝
Ruberoid Co.	16⅝	16	16½
Scott Paper Co.	35½	35	35½
Scott Paper Co., pf.	110	110	110
Sutherland Paper Co.	....	....	....
Union Bag & Paper Corp.	11¼	11	11¼
United Paperboard Co.	2⅞	2¾	2⅞
U. S. Gypsum Co.	58½	55⅞	55⅞
U. S. Gypsum Co., pf.	177	176	177
West Virginia Pulp & Paper Co.	17½	17½	17½

New York Curb Exchange

High, Low and Last for Week Ending July 2, 1941

	High	Low	Last
American Box Board Co.	4½	4½	4½
Brown Co., pf.	17	16¾	17
Great Northern Paper Co.	37	37	37
Hummel-Ross Fibre Corp.	5⅝	5¼	5⅝
National Container Corp.	11	11	11
St. Regis Paper Co.	2⅛	2	2
St. Regis Paper Co., pf.	100	95	95
Taggart Corp.	2¼	2⅛	2¼

Abitibi Earns $752,858

[FROM OUR REGULAR CORRESPONDENT]

TORONTO, Ont., June 30, 1941—An indication had been given in Abitibi's official earnings statement for April that shipments for May would be substantially lower than in the same month last year, and a decline in earnings, therefore, was expected. The May official statement confirmed expectations, for a decline was shown in net available for interest and depreciation of $64,599, or 7.9% at $752,858, reflecting a decrease in newsprint shipments of 13,103 tons, or 27%, offset by an increase in shipments of sulphite pulp of 748 tons, or 11.3%, at 7,359 tons, which sold at a much higher price than a year ago.

The official figures for May, prior to audit and charges for depreciation and bond interest, compared with $695,728 for April and $817,457 for May last year.

Included in the May figures for this year is $159,318 received in United States exchange.

For five months earnings on the above basis were $3,131,023, compared with $2,441,367 in the corresponding period of a year ago.

Shipments of newsprint in May, according to G. T. Clarkson, receiver and Manager, were 35,494 tons, compared with 34,476 tons in April and 48,597 tons in May, 1940.

Present indications are that shipments of newsprint will be about 34,500 tons for June, 1941, as compared with 48,946 tons in June, 1940.

Shipments of sulphite pulp in May amounted to 7,359 tons, compared with 7,043 tons in April and 6,611 tons in May, 1940. Present indications are that shipments of sulphite pulp in June will amount to about 7,300 tons, against 6,658 tons in June a year ago.

If the official forecast of shipments for June are realized they will show a decline of some 30% compared with a year ago, and the change suggests a sharp decline in net earnings for the period, despite the increase of 21.3% indicated in shipments of sulphite pulp.

Tomahawk Makes Good Report

[FROM OUR REGULAR CORRESPONDENT]

APPLETON, Wis., June 30, 1941—Greatly increased production and lower production costs enabled the Tomahawk Kraft Paper Company, Tomahawk, Wis., to make an outstanding showing for the last year, according to the report of A. L. Kreutzer, president, submitted at the annual meeting of stockholders at the Wausau Club, Wausau, Wis., June 24.

"Paper production for the current year exceeded last year's production by nearly 12%," the report stated. "Pulp production exceeded last year by more than 42%, making it possible for us to operate the paper mill at full capacity with the use of but very little foreign pulp during the year. Our sales average for the current year exceeded our past year by about $10 per ton. Our cost of producing paper was approximately $1.60 per ton less than the previous year."

The financial statement showed a net profit of $269,928.83 for the year ending May 31, 1941, in comparison with $90,135.21 for the preceding year. The operating profit for the year was $534,487.82. Income taxes of $176,000 were paid. The firm has 34,000 shares of stock outstanding.

All officers were reelected as follows: President, A. L. Kreutzer; vice-president and general manager, S. B. Bugge; vice-president and sales manager, J. H. Cowhill, Chicago, Ill.; secretary-treasurer, D. C. Everest, Wausau, Wis., and assistant secretary-treasurer, C. G. McLaren, Tomahawk, Wis. Additional directors are: C. C. Yawkey and F. K. McPherson, Wausau, Wis., and Ben Alexander, Chicago, Ill.

Celotex Votes Dividend

The Celotex Corporation voted the usual quarterly distribution of 25 cents a share on the common stock, payable August 1 to stockholders of record July 25. On May 10 an extra disbursement of 12½ cents was made, before which the quarterly payment was made on May 1.

Mead Nets $1,431,407

The Mead Corporation and subsidiaries for the fifty-two weeks ended March 22 reports a net profit of $1,431,407, after a provision of $36,500 for excess

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profits taxes, equal, after dividend requirements on 31,707 shares of $6 Series. A preferred stock and 47,500 shares of $5.50 Series B preferred stock outstanding at the close of the period, to $1.57 each on 625,000 shares of common stock. The net profit does not include $220,557 net profit on the sale of an investment in the St. Joe Paper Company, which was credited directly to earned surplus.

Finnish Concern Buys Interests

MINNEAPOLIS, Minn., June 30, 1941—R. H. M. Robinson, president of the Minnesota and Ontario Paper Company and of the Insulite Company, announced, last week, that negotiations for the sale of the Finnish interests of the company, which have been under way for several weeks, have been completed and the transaction closed. The purchaser is a Finnish corporation of standing.

Mr. Robinson was not prepared, at this time, to disclose the terms of the sale except to say that a substantial part of the price was received in U. S. dollars and the balance in finmarks. The finmarks are blocked for the period of the war.

The sale will not affect the business of the Insulite Company in Canada, or in the United States and its possessions.

To meet a world demand for insulite products, the mill was erected in 1930 at Kymi, six miles inland from Kotka, on the Gulf of Finland. At one time, shipments of insulite left this port for some ninety world markets in Asia, Australia, Africa, Europe, Central and South America.

Gaylord Container Co. Licensed

Fred Hummel, president of Hummel-Ross Fibre Corporation, announced last week that Gaylord Container Company of Saint Louis, Mo., has recently been licensed under the United States Product and Apparatus Patents on the manufacture of fiber board with the use of the secondary head box.

The secondary head box is a device that improves the quality of the board, increases production, and lowers costs.

With the exception of very few, practically all the manufacturers of kraft liner in the United States and Canada are now licensed under these patents. Those licensed to date are: Southern Kraft Corporation, Union Bag and Paper Company, Gaylord Container Company, Kieckhefer Container Company, Albemarle-Chesapeake Corporation, Australian Paper Manufacturers, Ltd., St. Joe Paper Company, Hinde & Dauch Paper Company, Filer Fibre Company, Fox Paper Company, Pacific Mills, Ltd., Schmidt & Ault Paper Company.

Bates Bag To Call Debentures

The Bates Valve Bag Corporation, of N. J., successor to the Bates Valve Bag Corporation of Delaware, has issued notice that the corporation's fifteen year sinking fund of 6% gold debenture bonds, due August 1, 1942, will be redeemed on August 1, 1941.

Raybestos-Manhattan Net Up

The Raybestos-Manhattan, Inc., and domestic subsidiaries for the March quarter reports a net profit of $573,282, equal to 91 cents a share on 628,100 shares of no par capital stock, against $434,441 or 68 cents a share on 631,200 shares last year.

National Defense Saving Program

Americans are giving Uncle Sam $100,000,000 a week to save for them and receiving in return Defense Savings Bonds and Stamps. Labor and industry both have endorsed the Savings Program of the Government. Nevertheless, there are still many who ask: Why? What is the reason for this National thrift undertaking?

The reasons are manifold. Strange as it seems, with war all around us, America is preparing for peace. In this period of unlimited emergency, vast requirements are being made of industry by the Federal Government. Wheels are turning at top speed to produce the weapons of defense—weapons that will assure and protect the freedom and safety of the nation. As a result, the national income is jumping sharply. Wages and salaries are increasing. So, too, is employment. Money is more plentiful.

The cash involved in the purchase of Defense Savings Bonds is put to work at once to protect the freedom of the country. At the same time, the bond protects the individual against financial consequences of a post-war readjustment. Thus, the program achieves a two-fold purpose.

There are three types of Defense Savings Bonds, designed to meet the needs of all people. The Series E, or "people's bond", however, is the one of particular interest to the average American man, woman or child. This investment preserves the character of the Savings Bonds which have proved so popular since they were first put on sale March 1, 1935.

These Series E Bonds may be bought for $18.75, $37.50, $75, $375 and $750. They grow in value in ten years to $25, $50, $100, $500 and $1,000, respectively. The annual investment yield is 2.9 per cent a year, compounded semi-annually, when a bond is held to maturity in accordance with a table of redemption values printed on the face of the bond.

Series F, also an appreciation bond, is issued at $74, $370, $740, $3,700 and $7,400. These bonds mature in 12 years to $100, $500, $1,000, $5,000 and $10,000. Series G is designed to meet the demand for a current income bond. These are issued at par and may be purchased in denominations of $100, $500, $1,000, $5,000 or $10,000. Series G Bonds bear interest of 2.5 per cent paid semi-annually by Treasury check.

In addition to individuals, these two series of bonds may also be registered in the name of any corporation, partnership or trustee.

If an individual should be pressed for cash, the Treasury will redeem the bonds before maturity. The full faith and credit of the United States Government are behind all of these bonds.

Defense Savings Stamps are for the convenience of purchasers who cannot afford to pay $18.75 at any one time. These stamps, on sale at post offices throughout the country and at many other outlets, are issued with handy devices for safe keeping. On the purchase of a 10-cent stamp, a card is furnished for mounting 25 of these stamps which may then be exchanged for $2.50 worth of the larger sizes. With the purchase of a 25-cent, 50-cent, $1 or $5 stamp, an attractive pocket album is given free in which to mount the stamps, which may be exchanged later for a bond.

Secretary Morganthau has announced that the Treasury's Defense Savings Program is to be a continuing effort.

N.P.T.A. Executives Meet

In accordance with a new policy officially established last year, the executive committee of The National Paper Trade Association held a mid-year meeting at the Waldorf-Astoria, New York City, last month.

The full membership of the committee was in attendance, including President P. W. Lesh, Vice-Presidents C. E. Roach and J. H. Brewer, Treasurer C. W. Vernon and F. T. Jamison, J. M. Sturm, C. H. Maurinus, G. W. Weaver and L. S. Pollock. Former Presidents A. M. Miller and G. G. Cobean attended for a short time and Counsel J. K. Javits and all staff members of course were present.

The session lasted all day and covered many matters of vital importance to the membership and indeed to the trade at large, particularly in connection with the impact of the Defense Program of the Paper Industry. President Lesh reported his attendance with the executive secretary at a meeting of the Paper Industry Advisory Committee and appropriate action was taken with respect to conditions and developments reflected in his report. It was emphasized that the association office would be recognized by the Government, the manufacturers and the trade as the source of essential and dependable information regarding Defense procedure and requirements. Numerous important defense reports have already been issued in the circulation of which non-members of the association were liberally included.

Special attention was given to the effort for simplification and economy in the production and stocking of fine papers in connection with which appreciation was expressed of the activity of A. M. Miller for the book paper committee in pushing this effort. A good response has been received from the membership in supplying needed information and increasing interest and cooperation are shown by manufacturing groups.

The need of economy in all production by the elimination of unnecessary grades, sizes and items has been increasingly stressed by the Office of Production Management.

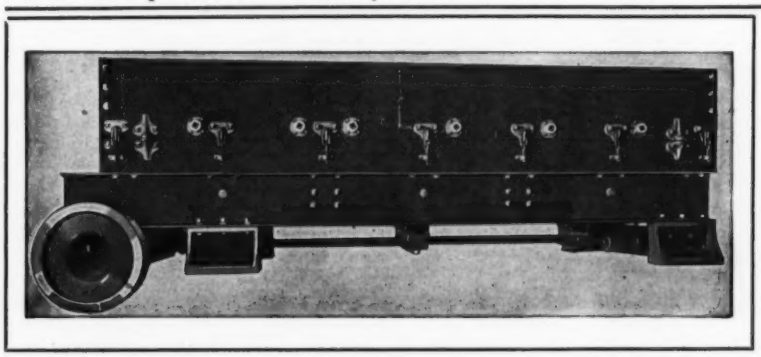
Other important matters discussed included merit rating as affecting unemployment insurance taxes paid by merchants and the recommendations adopted by the National Conference of Weights and Measures Officials held in Washington a few weeks ago. A digest of these regulations has been circulated to members who are advised to be watchful and active in respect of legislation or regulations in their respective states or cities which they may believe to be unduly disturbing or arduous in their effect on long established practice in the distributing trade.

The meeting concluded with a discussion of plans for the Fall Convention to be held as usual at the Stevens Hotel, Chicago, September 15-17 with an accompanying exhibit of wrapping papers, paper products, twines and kindred lines.

Iroquois Mill Reopens

The Iroquois Paper Company, Thompson, N. Y., resumed operations July 1.

The mill, which has been idle since last November, will employ about 90 persons. The company has made a contract with the Container Corporation of America to provide the materials and take the output of the mill.



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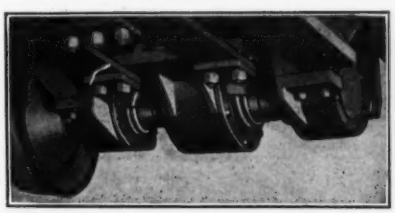
MOST of the operating and wearing parts of standard flat screen construction have been eliminated in the Appleton-Wagner Screen. Only one eccentric and two roller bearings are required for the drive operating one to four screens in line. There are no individual eccentrics, no cams or roller followers. The smooth, easy operation of the rocker arms provides rapid vibration without noise or pounding, positive action under all conditions, maximum capacity and the finest screening. Power consumption is very low. Only the drive needs lubrication. Write for the Appleton-Wagner Screen folder giving complete information.



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PAPER TRADE JOURNAL

Title Reg. U. S. Pat. Off.

Henry J. Berger

EDITOR

Vol. 113 July 3, 1941 No. 1

COMING EVENTS IN PAPER INDUSTRY

NEW ENGLAND SECTION. Technical Association of the Pulp and Paper Industry—Third Friday of each month at the Roger Smith Hotel, Holyoke, Mass.

DELAWARE VALLEY SECTION. Technical Association of the Pulp and Paper Industry—First Friday of each month at the Engineers Club, Philadelphia, Pa.

LAKE STATES SECTION. Technical Association of the Pulp and Paper Industry—Second Tuesday of each month at the Conway Hotel, Appleton, Wis.

KALAMAZOO VALLEY SECTION. Technical Association of the Pulp and Paper Industry—First Thursday of each month at the Park, American Hotel, Kalamazoo, Mich.

TECHNICAL ASSOCIATION OF THE PULP AND PAPER INDUSTRY, Fall Meeting, Ann Arbor, Mich., September 16-19.

TAXES AND ECONOMY

With the highest tax bill in history in preparation, heavy increases on individuals and corporations will be levied in the new revenue bill. The basic outline of the bill which the Administration requests Congress to pass is about ready for debate. It will include (1) higher individual income taxes, particularly in the lower-income groups which are now untaxed. The object is to raise $1,160,000,000 annually in additional revenue. (2) Increases in corporation taxes are expected to raise $1,320,000,000 annually in additional revenue; by higher excess profits taxes and a special surtax of 5% on the first $25,000 of a corporation's income, and 6% on all above that figure. From these sources the Government expects to increase its revenue by $2,480,000,000 annually. Congress has been asked by the Administration to raise $3,500,000,000 in taxes annually. It is planned to raise the $1,000,000,000 additional by increasing estate and gift taxes to yield about $100,000,000; and to place excise taxes on such articles as automobiles, refrigerators, radios and other articles competing with metals and materials needed in large amounts for national defense. It is hoped to raise about $900,000,000 by these excise taxes.

In view of the stiff tax bill which taxpayers must meet, it is pertinent to inquire what the Administration intends to do to economize and reduce the Federal budget for 1942. In an article on "Only Public Demand Will Bring Governmental Economy", issued by Tax Foundation, Inc., 30 Rockefeller Plaza, New York, on June 12, the comment says in part that, "By writing letters and presenting resolutions to their Congressmen, business men and their organizations can help greatly to strengthen the hand of the economy bloc in Congress in its efforts to reduce the Federal budget for next year. Following Secretary Morgenthau's recommendation for a cut of $1 billion, the mountain has labored and brought forth a mouse. Congress has not received from business, labor, or agriculture, sufficient demand for economy to justify serious retrenchment in the urgent fiscal crisis. Until it does, spending as usual will continue, despite our $20 billion ordinary government cost; despite our $40 billion defense program; and despite our $67 billion public debt."

Continuing, the article points out that, "Any business man can see, after a ten-minute glance at the fiscal picture for 1941 and 1942, that Congress, in the face of grave financial emergency, is little concerned over reduction of the present huge rate of non-defense expenditures. For instance, last year the government spent $387,000,000 through the Civilian Conservation Corps and the National Youth Administration. Estimates for this year and next are reduced to only $369,000,000 and $363,000,000. While millions of our youth are giving up jobs to join defense forces, is there any sound reason why our government, which may ask the supreme sacrifice from one segment of our young men, should continue supportign another large segment at public expense?

In referring to relief cost the article says in part that, "Although defense production has greatly expanded private employment in virtually every branch of industry, the estimated cost of work relief has been cut only slightly from $1,860,000,000 last year to $1,477,000,000 for 1941 and $929,000,000 for 1942. Business taxpayers should find out immediately why this huge relief burden is allowed to continue at a time when a typical business index stands at 146% of the 123-25 average. Organized business should demand from Congress an immediate reduction in relief expenditures commensurate with the rise in employment. . . . In the present world crisis, what excuse has Congress for enlarging our public works program on a business-as-usual basis, when it was conceived to take up a slack in employment which is fast disappearing? For the fiscal year 1940 the public works bill to the taxpayers was $540,785,000. This year it was raised to an estimated $570,000,000, to be spent by eleven agencies and departments. . . . Aids to agriculture last year amounted to $1,375,000,000. This year, due to credits paid back to the government by farmers, the total will drop to an estimated $791,000,000. However, for the fiscal year 1942, the estimate jumps to $1,113,000,000. Why should our farmers receive these huge government bounties while industry contributes more than $4 billion a year in business taxes for the support of government?"

The article suggests the following resolution for business groups in expressing to Congress their views on economy: "Whereas, we are now launched on a program of defense for which authorizations upwards of $40,000,000,000 have already been made; and whereas this unprecedented burden must be superimposed on levels of expenditures, local, state, and

federal, which even prior to the defense program has been swollen by an annual outlay of $20,000,000,000; and whereas the nation cannot meet the costs of the defense program without drastically curtailing the costs of state, local and federal governments; and whereas the vital need for cutting federal expenditures in non-defense classifications has already been urged upon Congress by Secretary of the Treasury, Morgenthau; and whereas Secretary Morgenthau has also clarified for Congress specific areas in which such cuts can be made; now therefore be it resolved by . . . . that the President and the Congress of the United States take immediate action to attain the objectives set forth by Secretary Morgenthau and bring about essential and all possible savings in federal non-defense spending; be it further resolved that the public and their representatives make the equally vital contribution to the national defense by demanding and bringing about maximum economies in all state and local governments."

Affiliate with Stevens-Nelson

The Stevens-Nelson Paper Corporation 109 East 31st Street, New York announces that on July 1, 1941 Quincy P. Emery and staff will be affiliated with that corporation. It is stated "This action is for the purpose of further developing our department of domestic printing papers. With this increase in our sales force we can assure our customers of a most intelligent and efficient service in the sale of our domestic printing papers."

Production Ratio Report*

(Production as per cent of six-day capacity)

COMPARATIVE WEEKLY SUMMARIES

Current Weeks, 1941		Corresponding Weeks, 1940	
May 17	98.8	May 18	91.7
May 24	100.8	May 25	92.7
May 31	97.7	June 1	87.6
June 7	98.1	June 8	91.3
June 14	99.3	June 15	91.9
June 21.....(Prelim.)	*99.7*	June 22	93.1
(7-day operations prevalent)			

COMPARATIVE MONTHLY SUMMARIES

Year	Jan.	Feb.	Mar.	Apr.	May	June	July
1940	89.1	84.7	82.3	84.3	90.0	92.1	85.3
1941	85.1	89.4	92.3	96.4	*99.3*	...	...

Year	Aug.	Sept.	Oct.	Nov.	Dec.	Year Avg.
1940	85.1	81.5	85.5	84.9	80.9	85.6
1941	...	...	...	...	...	...

COMPARATIVE YEARLY SUMMARIES

	1935	1936	1937	1938	1939	1940	1941
Year to Date..	68.6	78.2	89.1	67.4	79.5	87.0	*93.1*
Year Average..	69.9	80.4	79.8	71.5	83.4	85.6	...

* Based on tonnage reported to American Paper and Pulp Association. Does not include mills reporting to National Paperboard Association, except in isolated cases where both paper and paperboard are produced and separate tonnage figures are not readily available. Does not include mills producing newsprint exclusively.

PAPERBOARD OPERATING RATIOS†

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year Avg.
1936	62	67	67	70	69	70	69	75	78	82	80	74	72
1937	80	86	86	88	85	77	66	74	69	65	55	45	73
1938	54	60	61	57	58	56	57	66	66	70	65	59	61
1939	60	67	71	69	64	67	63	72	74	84	81	71	70
1940	71	70	69	70	76	79	72	74	72	79	77	71	73
1941	75	81	82	83	*84*	..	..	..	..	..	..	..	..

Week ending May 17, 1941—84
Week ending May 24, 1941—85
Week ending May 31, 1941—84
Week ending June 7, 1941—84
Week ending June 14, 1941—88
Week ending June 21, 1941—*88*

† Per cents of operation based on "Inch-Hours" reported to the National Paperboard Assn.

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OF AMERICAN PULP

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BRITAIN
SOUTH AMERICA
AND ALL WORLD MARKETS

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& COMPANY
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FOR 8 YEARS WITHOUT COMPLAINT

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CORNING
Glass Works
Corning, New York

Pyrex Industrial Glass

Section of the
Technical Association of the Pulp and Paper Industry

Edited by Ronald G. Macdonald, Secretary

The Effect of Drying on Quality*

By Frederick C. Stamm[1]

Abstract

The possibility of the elimination of curl and cockle and the increase of drying rates is discussed.

Trouble from cockle and curl can be eliminated by the proper control of temperature during the drying of the sheet. That is a rather broad statement, therefore, let us modify it slightly by adding that sometimes, it may be rather hard to find just what this drying temperature should be for the particular sheet which is being made. No two machines are alike, no two sheets are alike, and even the same sheet made at different times will vary considerably. It therefore, seems evident that no two sheets will dry exactly alike.

For a number of years, this matter of drying has been a major issue for discussion and there have been a good many wild theories concerning the best method to use. Yet all the real research work which has been done, seems to consistently agree that control of temperature during the various stages of drying is important.

There are four distinct phases of the drying problem. First, is the matter of drainage which deals with the problem of removing the air and condensate from the driers in order to get maximum heat transfer. Second, moisture control, which deals with the proper control of the steam to the machine in order to maintain a uniform moisture in the sheet. Third, ventilation which deals with the matter of removing the water vapor after it has been evaporated from the sheet, and fourth, graduated temperature control, which deals with the independent control of the various sections in order to prevent excessive shrinkage cockle and curl. In this discussion we will consider only the effects of graduated temperature control on the sheet.

Graduated Drying Temperature Control

This matter of graduated temperature control is not new. For years, operators have agreed that lower temperatures at the wet end are desirable, and for years, they have been trying to get these lower temperatures by closing up the hand valves on the first few driers. In fact, many mills are doing this very thing today, although it generally leads to trouble and is sooner or later done away with. A cold, sweating, rusting drier is much more objectionable than one which is too hot. Probably the best way to understand the effect of temperature control, would be to visualize just what happens during the drying of the sheet.

Suppose that we take a furnish of sulphite stock, beat it just enough to clear the fibers and put it over the machine. The sheet going to the driers will contain about 65% water, but this is all free water, that is, water which is held between the fibers by capillary attraction. This free water evaporates out from between the fibers very easily. There will be a minimum of shrinkage and very little tendency to curl or cockle. There may be a slight tendency to pick at the wet end if these driers are too hot, but this should not be excessive. On such a sheet, there will be very little benefit from the use of graduated temperature control.

Now suppose that we go to the other extreme. Take this same stock, beat it for six or eight hours, size it well and put it over the machine. We will assume the moisture content of the sheet entering the driers will still be 65%. However, at least 25% of this water is now hydrated water, water which has been more or less chemically combined with the fibers to form hydrated cellulose. Some of this water has been driven into the fiber causing it to swell two or three times its original size. Some has combined with the cellulose to form a jelly like substance surrounding the fiber. This gelatinous film is really a cellulose cement which, when it again dries, will tend to glue all the fibers together thus tremendously increasing the bond and strength of the sheet.

When this well hydrated stock is put over the driers, the reaction is far different than with the free stock which we have just considered. The tendency to stick and pick on the first wet-end driers is very pronounced. The tendency to cockle on the first few driers is also increased, although this is really more of a blister than it is a cockle. The over-all shrinkage of the sheet is tremendously increased and from this shrinkage develop all of the major troubles from cockle and curl. Now let us visualize just what benefits we can expect from graduated temperature control on this particular sheet.

First of all is the matter of sticking and picking. The hydrated cellulose surrounding the fibers is a good bonding glue. So is any starch or size which has been added to the stock. Any adhesive substance will stock to a hot surface, and if your wet-end driers are too hot, you can surely expect trouble from picking. The material which is picked off the sheet, coats the drier and this coating gradually burns on

*Presented at the Annual Meeting of the American Pulp and Paper Mill Superintendents Association, Poland Spring, Me., June 17-19, 1941.

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until the whole surface is rough and bumpy, a condition which will certainly harm the surface of a fine printing sheet. Furthermore, any picking from the sheet, tends to lift the surface which results in poor finish and fuss and this condition can never be eliminated by the calenders.

The remedy for this condition is obvious. Keep your wet-end driers down in temperature. Start the first wet-end drier at about 140 deg. F. and gradually increase this over five or six driers until you reach the full steam pressure carried on the main section of the machine. However, be sure that this increase is gradual. Otherwise, you may find that all you have done is to move the point of picking further down the machine. Sticking and picking can definitely be eliminated by proper graduation at the wet end.

The problem of cockle and curl is much more complicated to deal with. First of all, there is no question but that both cockle and curl are fundamentally due to an unequal tension in the sheet, and that this tension is set up during the process of drying. Furthermore, this tension is a direct function of the shrinkage. Thus the greater the shrinkage, the greater will be the tendency to cockle and curl. It is easily understood then why your well beaten stocks always have a tendency to give you trouble. The more you hydrate the stock, the more water you drive into the fibers, the greater will be the shrinkage and the greater will be the tendency to cockle. Cockle can always be helped by freeing up the stock, but of course your sheet strength will suffer.

Now given a certain stock with a definite amount of hydration, how can we control the shrinkage of that stock so as to eliminate, to a large extent, the tendency to curl and cockle. So that we won't lose sight of the fundamental cause let us again state that all curl and cockle are caused by an unequal tension in the sheet. Furthermore, there can be no tension in the sheet until the starch, the size, and the hydrated cellulose has taken a set.

During the first stages of drying, the fibers are free to slide on each other, there is no bonding as yet, and thus, there can be no tension in the sheet. As the free water is driven off, we reach a stage where the combined or hydrated water starts to evaporate. At this critical point, bonding between the fibers starts to take place, and from here on the greater part of your shrinkage takes place. During this bonding period, any unequal tension which is set up in the sheet, will result in curl and cockle at the reel. You will quickly realize that at this critical period, there are two opposing factors which are fighting against each other. On the one hand, the fibers are trying to shrink as they lose moisture and this shrinkage tends to produce a definite tension in the sheet. On the other hand, the hydrated cellulose is trying to set, thus bonding those fibers so they cannot shrink, and this tends to add more tension to the sheet. Naturally, high temperatures and rapid drying at this point only tends to aggravate the condition. Any fiber, whether it be leather, wood, wool, or paper is injured by excessive temperatures and the result is an excessive shrinkage, warping, and hardening of the fibers. Lumber which has been allowed to slowly air dry in the shade, is far superior to the commercial lumber which is dried at higher temperatures. Yet, most paper machines today apply full steam temperatures to the dry end thus shrinking the sheet excessively, cockling the sheet, and at the same time injuring the bond which tends to reduce the strength.

It has been pretty well established that graduated temperatures at this critical point do benefit the sheet considerably by slowing down the shrinkage so that the fibers get a chance to equalize the tension before they are finally and firmly bonded. Just how much graduation is necessary to obtain the desired results is something we cannot say. Some sheets may require quite a lot, others, very little. For this reason, the control should be flexible enough to enable the superintendent to quickly adjust the dryers to any desired temperature. In other words, like many of the fine points of papermaking, it is a matter of cut and try, and the man with the best judgment gets there first.

Thus graduated temperatures at the wet end of the machine will eliminate picking and also prevent blistering of the sheet. Graduated temperatures at the dry end will slow down the final drying, ease up on the shrinkage, and allow the sheet to equalize itself before the final bonding takes place. If the sheet is equalized when this final bonding takes place, there will be no curling or cockle. Sizing is also directly improved by careful handling of the temperatures but this one is too involved a subject to get into in this discussion.

You have probably concluded by this time that graduated temperature control is the answer—that once proper control is in operation all your troubles will have disappeared. You can feel assured that this is far from true. No control, however good it may be, can undo the harm which is caused by poor operating conditions on the rest of the machine.

First of all, a sheet which is poorly formed will dry uneven, and although temperature control will help it can never entirely eliminate the cockle which is caused by this poor formation. Second, a two sided sheet will have a definite tendency to curl due to the different shrinkage of the two sides. Poor ventilation, which we will say leaves the bottom drier felt wet and the top felt dry, will have a tendency to bond the fibers on the top side ahead of those on the bottom side and the result will be curl. You may be carrying the same weights on both your top and bottom drier felts, but due to friction and poor arrangement of pulleys, one felt may be running much slacker than the other. The result will be curl, and maybe cockle as well.

You may be operating with both your drier felts too slack, which will certainly set up an ideal condition to produce cockle. And on this question of drier felt tension, we certainly should make a much greater effort to study the problem than we have in the past. The average machine today operates with about 4 pounds tension per inch of width. That is figuring the direct weight which is being carried on the cable. Friction and poor pulley alignment may cut this down to one or two pounds. The average machine builder designs for about 15 pounds tension. Tight drier felts help tremendously to increase the capacity of the machine and at the same time tend to eliminate curling and cockling to a great extent.

You may also find that a study of your stock preparation will help you in this matter of cockle. Remember that the more you hydrate, the more shrinkage you will have and the more tendency to cockle. It might be that on your particular sheet, less beating and a little more jordaning will still give you the sheet characteristics you want, while at the

same time the less hydrated stock and the shorter fibers will help the cockle considerably. A long fibered stock will cockle and curl much more than a short fibered one.

Graduated temperature is not a cure-all for your troubles, but it will improve a poor sheet and make a good sheet better. To be effective, however, it must be flexible enough to allow the operator to quickly raise or lower the temperature on the particular section in order to see just what effect this change has on the sheet which he is making. No two sheets are alike, in fact, it is safe to say that no two beaters are alike and when it comes to drying sheets like thin condenser papers, we have found it advantageous to adjust the individual driers to the changes in the individual beaters in order to get the best results.

Cockling and curling can be eliminated by proper control of temperature during the drying but sometimes it is necessary to correct some of the other operating troubles before the full benefit of this type of control can be appreciated.

New TAPPI Members

The executive committee of the Technical Association of the Pulp and Paper Industry has elected the following to membership:

Kenneth W. Britt, research chemist, Scott Paper Company, Chester, Pa., a 1929 graduate of Cornell University and formerly with the Tennessee Copper Company, Copperhill, Tenn.

Paul J. Carlisle, manager, R. & H. Chemicals Dept., E. I. du Pont de Nemours & Co., Niagara Falls, N. Y., a 1913 graduate of Indiana University and formerly with the Roessler & Hasslacher Chemical Co.

Bruce Crane, in charge of manufacturing, Crane and Company, Dalton, Mass., a 1931 graduate of Yale.

Donald C. Culver, engineer, Brown Instrument Company, Philadelphia, Pa., a 1936 graduate of Lehigh University and formerly with the General Motors Corporation, Trenton, N. J.

Charles Davidoff, chemical engineer, Lucius Pitkin, Inc., New York, N. Y., a 1937 graduate of City College.

J. Edward Doyle, assistant chief chemist, Chesapeake-Camp Corporation, Franklin, Va., a 1932 graduate of Massachusetts State College, and formerly with the American Writing Paper Co., Holyoke, Mass.

Daniel Figlioli, chemist, Boorum & Pease Company, Brooklyn, N. Y., a 1922 graduate of Lafayette College.

John D. Haskell, vice president and general manager, Dilts Machine Works, Fulton, N. Y.

J. A. Holmes, director of service, National Aluminate Corporation, Chicago, Ill., a 1922 graduate of the University of Kansas and formerly with the Rock Island R. R., Topeka, Kan.

Louis Korte, research chemist, American Dyewood Company, Belleville, N. J., has been transferred from the Associate to the Active grade.

Otto Kuemmerling, chemist, Wausau Paper Mills Company, Brokaw, Wis., formerly with Lindemann and Hoverson, Milwaukee, Wis.

Hugo Nihlen, fellow of the Royal Technical University, Sweden, studying at the Forest Products Laboratory, Madison, Wis., a 1934 graduate of the Royal Technical University of Stockholm, Sweden.

Herbert T. Randall, vice president and consulting engineer, champion Paper and Fibre Company, Hamilton, Ohio, attended the University of Cincinnati.

Philip N. Retson, control chemist, Consolidated Water Power and Paper Company, Appleton, Wis., a 1940 graduate of Lawrence College.

G. Schollin-Borg, Haallsta (Sodermanland), Sweden, a 1932 graduate of the Royal Institute of Technology, Stockholm, Sweden, and formerly with the American Heat Reclaiming Corp., New York, N. Y.

B. Franklin Stahl, chief chemist, Terre Haute Paper Company, Terre Haute, Ind., a 1933 graduate of Swarthmore College and formerly with the Rockford Paper Company, Rockford, Ill.

Willard I. Upson, director, Analytical Chemists of Cincinnati, Cincinnati, Ohio, a 1916 graduate of the University of Cincinnati and formerly with H. Broeman & Co., New York, N. Y.

William R. Zwecker, manager, North American Pulp and Paper Corporation, Cheboygan, Mich., a 1927 graduate of the University of Dresden and formerly with the Ancram Paper Mill Company, Ancram, N. Y.

TAPPI Notes

F. R. Hamilton, formerly research engineer at the University of Michigan, is now with the Allied Paper Mills, Kalamazoo, Mich.

G. W. E. Nicholson, formerly manager of the Panama City and Georgetown mills of the Southern Kraft Corporation, is now resident manager of the Union Bag and Paper Company, Savannah, Ga.

G. S. Schmid, formerly of the Michigan Paper Company is now technical director of the Falulah Paper Company, Fitchburg, Mass.

E. P. McGinn, formerly of the Champion Paper and Fibre Company, Canton, N. C., is now technologist for the Curtis Publishing Company, Philadelphia, Pa.

B. E. Lauer, associate professor of chemical engineering at the North Carolina State College of Agriculture and Engineering, Raleigh, N. C., has been appointed chairman of the TAPPI Fibrous Materials Testing Committee to succeed C. E. Hrubesky of the Forest Products Laboratory, Madison, Wis.

The following companies have become corporate members of the Technical Association of the Pulp and Paper Industry during the past six months:

Ecusta Paper Company, Brevard, N. C.
Berst-Forster-Dixfield Company, Plattsburg, N. Y.
Sutherland Paper Company, Kalamazoo, Mich.
Sonoco Products Company, Hartsville, S. C.
Cornell Wood Products Company, Cornell, Wis.
Rayonier, Inc., Shelton, Wash., and Fernandina, Fla.
Gulf States Paper Corporation, Tuscaloosa, Ala.
Rolland Paper Company, Montreal, P. Q.
Compania de Celulosa de Filipinas, Manila, P. I.
Castanea Paper Company, Lock Haven, Pa.
Cellulose Development Company, Middlesex, England.

The TAPPI Bibliography of Papermaking and U. S. Patents for 1940 has just been issued to members of the Technical Association. Copies may be obtained by nonmembers at three dollars per copy from TAPPI, 122 East 42nd street, New York, N. Y.

Accuracy and Significance of Bacterial Counts from Paper and Paperboard*

By Robert S. Breed[1] and J. R. Sanborn[2]

Abstract

Bacterial counts are used by bacteriologists to determine whether growth of microorganisms is taking place in any given environment. Counts are not made in an effort to find bacteria that cause disease. The only method thus far devised for making estimates of the number of bacteria in paperboard is a modification of the so-called agar plate technique. There is no method whereby the true accuracy of the counts obtained from paper products can be determined so that we can only guess whether the results obtained in routine analytical work are accurate counts. The counts obtained may be either too high or too low.

It has been found to be difficult to make accurate counts from disintegrated paper and paperboard as the bacterial flora is composed so largely of spores of the spore-forming bacteria. Because it has been pointed out recently that dilutions carried out by using 5 or 10 petri plates usually cause the counts to be somewhat larger than where only 3 plates are used, a study was made to determine whether the use of glazed surface porcelain covers for petri dishes would permit a more satisfactory growth of colonies. This has been found to be the case and it is recommended that this type of petri dish cover be used rather than to increase the number of petri plates. The smaller the number of plates used, the more likely they are to be suitable for counting. Even under the best conditions, dust contaminations play their part in making counts too high and cause significant errors where dilutions are carried too far.

The results secured from materials containing few bacteria should never be regarded as accurate as they are badly affected by well known and uncontrollable errors. They are, however, sufficiently accurate to show whether the paperboard is practically free of bacteria.

Bacterial "counts" are used by bacteriologist to determine whether growth of microorganisms is taking place in any given environment. Counts are not made in an effort to find bacteria that cause disease. Dirt and bacteria are likewise not synonymous terms. Many clean and wholesome foods contain millions or even billions of bacteria per gram.

Counts are made by special methods because bacteria are so tiny that they cannot be seen with the naked eye or even with low magnification. With the naked eye the fact can be determined that trees are abundant in any wooded area, that grass is abundant in meadows and pastures, and such information is frequently valuable.

To secure similar information regarding the distribution of bacteria in nature requires careful and painstaking work with special methods. The only method thus far devised for making estimates of the number of bacteria in paper and paperboard is the agar-plate technique. In this technique the bacteria are innoculated in a nutrient agar and allowed to increase in number until they form visible masses or colonies which are then counted.

The application of the agar plate technique to the making of counts of bacteria in various liquids such as water and milk began soon after agar and gelatin were developed as culture media for bacteria in Koch's laboratory about sixty years ago. This method was employed later for many foods such as butter, cheese, ice cream, meats, fish, and for materials such as soil. One of the most recent applications is for the bacteriological analyses of pulp, paper, and paperboard products.

It is unfortunate that there is no method whereby the true accuracy of the counts obtained from paper products by this technique can be determined. Even the most painstaking research, using refined methods, does not reveal the exact number of bacteria present in a gram of paper or paperboard, so that we can only guess whether the results obtained in routine analytical work are accurate counts.

This situation can best be discussed by choosing a comparison that is familiar to men in the pulp and paper industry. When purchasing pulp wood, estimates are made of the number of cords that will result from logging a given wooded area. Where the number of cords actually obtained is compared with the previous estimate it is possible to discover whether the methods used in making the estimate produced accurate results. No such check can be made on the accuracy of bacterial counts.

Thirty-five years ago milk control officials appointed committees to see what could be done towards bettering the agreement between agar plate counts obtained from duplicate samples of milk in different laboratories. The committees are still at work in an effort to standardize the details of the technique as applied to dairy products. No way has yet been found to control this situation absolutely. Some dairy laboratories continuously report counts that average higher or lower than those obtained from other laboratories.

It was realized from the first that the paper and paperboard industry would face similar problems if they made use of bacterial counts; and this has proved to be the case for some laboratories report that they secure higher counts where 0.1 gram of disintegrated paperboard is distributed in 5 or 10 rather than in 3 petri dishes, i.e., a greater dilution is used.

Accuracy of the Methods of Making Counts

In order to determine the best way of making bacteriological analyses in this specialized application of the plating procedure, studies were started at the Geneva Station about four years ago in order to de-

* Presented at the Annual Meeting of the Technical Association of the Pulp and Paper Industry, Roosevelt Hotel, New York, N. Y., Feb. 17-20, 1941.

Approved for publication by the Director of the New York State Experiment Station as Journal Paper no. 427, Feb. 3, 1941.

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velop a method for determining the number of bacteria in paper and paperboard products. It was obvious at the outset that a disintegration technique was required by means of which samples could be converted into pulp suspensions suitable for plating.

Sanborn (in 1932) tried to make counts from food packaging materials and the method then used was further developed in connection with bacteriological studies of paper milk containers *(1)*. Recently methods for carrying out this technique have been formulated by the TAPPI Bacterial Control Methods Committee *(2)*. Food mixers were first tried for disintegrating paperboard because they are readily adapted to bacteriological procedures. Problems of cost, sturdiness, and efficiency of these devices had to be considered as well, and various changes and modifications were made in the apparatus during the development of a routine technique.

Requirements were eventually found to be met satisfactorily by the relatively simple and compact types of food and beverage mixers (Figs. 1 and 2)[3] that are equipped with high-speed motors, stainless steel cups with covers, and stainless steel cutting knives driven by a shaft operated through gasketed bearings in the base of the cup. The advantages of this type of disintegrator are its rapid and efficient pulping, covered cups that can be readily sterilized by autoclaving, moderate cost, compactness, and general convenience. While these mixers are fairly sturdy, some mechanical weaknesses have developed because they are not designed for work as heavy as the disintegration of the tougher grades of paperboard. These weaknesses, however, have been largely overcome. These, or any other suitable disintegrator may, however, be used satisfactorily.

Once a uniform suspension is prepared in sterile water, the next problem is to plate adequate portions from this suspension in sterile petri dishes. At first, one large petri plate (150 mm.) was used for each 10-cc. portion containing 0.2 grams of pulp. However, these dishes made in Czechoslovakia are costly, break readily and are unavailable at the present time.

[3] The Stevens mixer was originally called to our attention through its use by M. J. Prucha of Urbana, Ill., while the Bersted mixer was called to our attention by Harold Brakewood of the National Folding Box Company, New Haven, Conn.

FIG. 1
Stevens Mixer

FIG. 2
Bersted Mixer

Later 10-cc. amounts containing 0.1 gram of disintegrated paperboard were distributed approximately equally among 3 regular size (100 mm.) dishes. Realizing that the number of bacteria in milk container board is small, one of the primary objectives in this work has been to secure plates with enough colonies on each plate to reduce dilution and distribution errors, and errors due to unavoidable contamination.

There are various well known sources of errors in plate counts. Those that tend to make the counts too high are:

(1) Counting objects for colonies that are not colonies.
(2) Discontinuous colonies. Certain types of spore-formers develop colonies from a single nucleus. The inexperienced worker may count these as separate colonies and so increase the count.
(3) Growth of extraneous colonies on the plates. These come from dust contaminations or less commonly other types of contaminations.
(4) The most important error of this type is caused by carrying dilutions too far so that distribution errors become large.

Known causes of too low counts include the following:

(1) Spreaders. The inhibitive effect of colonies of spore forming types of bacteria are well known to bacteriologists.
(2) Overlooking colonies. Here again the experience of the worker is important. It should be remembered that young people are less likely to overlook colonies on agar plates than older persons. The use of bifocal lenses starts for most of us at 40 plus because the lenses of our eyes do not accommodate themselves to changes in focal distances as readily at this age as when we are younger. Those of us that wear them know that even bifocal glasses do not bring back our youthful vision.
(3) Growth of clumps of bacteria or spores into single colonies. As the amount of clumping of the bacteria and spores in disintegrated paper and paperboard cannot be determined, no one can tell how much clumping reduces the counts obtained. Maybe the spores occur singly; perhaps they cling to the fibers in masses. In the former case, the counts obtained may represent the number of bacteria present fairly well. In the latter instance, the counts are much too small. Dilution tends to break these clumps and so increase counts.
(4) Failure of the bacteria to grow into visible colonies because the conditions provided are unfavorable for growth also produces counts that are too low. The bacteria may fail to grow just as seeds in a garden may fail to grow because temperatures are too hot or too cold; because the soil is not fertile—i.e., the agar medium may not be sufficiently nutritive—or for other reasons. Growing bacteria on agar plates is like growing plants from seeds in a garden and is equally tricky.

It is not necessary to discuss all of these sources of errors in count. Well trained technicians with good eyesight ought not to either overlook colonies nor to count more colonies than are present, though they need training in regard to these matters. All of these things can be checked by having plates counted occasionally by a second technician.

Because, however, bacteriological gardening has even more pitfalls than ordinary gardening, such work should be supervised by some person with specialized training in this work. Not all persons who have had graduate training in bacteriology have had training in this particular field. Hence, we at Geneva have tried to help the pulp and paper industry by offering specialized short courses of instructions for persons already trained in this field. Over 50 persons have availed themselves of this opportunity.

Gardening problems such as the selection of a proper nutrient agar, incubation temperature and the breaking up of clumps or masses of bacteria before seeding the plates may be dismissed in this paper in order to have more time to discuss certain sources of errors that are particularly significant in making counts from disintegrated paper materials. The new standard nutrient agar used for dairy products develops larger colonies that are less likely to be overlooked and so is recommended for this work.

Almost all of the analyses that are being made at present from paperboard are being made from board manufactured from such high grade materials and under such excellent conditions that counts are below the standard of 500 per gram that has been suggested for paperboard used for milk containers. Normally these counts are in the less than 100, or even less than

50 per gram class. The number of colonies grown per plate is usually less than 5, though this number may be as high as 15 to 20. Under these conditions, there are two sources of error that are of importance. Both tend to increase the counts.

The first of these is produced by the extraneous colonies whose importance becomes magnified as the number of colonies on the plate derived from the paperboard decreases to the vanishing point. The contaminations correspond to the weeds in a garden. The number ordinarily found is not great enough to be of any significance if the object of the analysis is merely to determine whether a given count is less than 500 or even than 250 per gram. They are, however, of real significance to the industry when attempts are made to establish the percentage of finished paraffined paper containers that are actually sterile*(3)*.

Records secured from 1212 control plates poured in six laboratories that used the precautions normally taken by routine control laboratories to protect plates against contaminations revealed from 9 to 30 extraneous colonies per 100 plates. Here and there individual plates carried as many as 15 to 20 colonies but errors as large as this are normally detected and discounted by the experienced worker. In five laboratories where extra precautions were taken to prevent these contaminations, the number of colonies found on 2055 plates varied from 6 to 15 colonies per 100 plates. In one laboratory that maintained a "sterile room" in which the entering air was washed and filtered, and all walls and tables washed down with a phenol solution, two colonies developed on 100 plates. Precautions are sometimes carried even further than this. For example, in the Connaught Laboratories in Toronto, workers wear face masks and ultraviolet light lamps are used for sterilizing the air in the room where human blood serum is being dehydrated for use in blood transfusions. The value of the product in these cases is so great as to justify these extreme precautions. The surprising thing is the amount of care it takes where it is desired to reduce these contaminations from a negligible quantity to the vanishing point.

The expensive precautions necessary to eliminate contaminations entirely are not justified where counts are being made from paperboard in order to determine whether counts are less than 500 per gram, there being sufficient tolerance in this standard to allow for normal numbers of contaminating colonies. In other words, in ordinary bacteriological gardening it is possible to reduce the number of weeds to a minimum; but not possible to eliminate all of them without introducing costs into the work that are unjustified.

The second of the errors that we wish to discuss may be clased as distribution errors. These become very important where dilutions are carried too far *(4)*. A study of Table I shows how important these distribution errors may become and why it is that we have tried in our work to use heavy inoculations of pulp suspensions so as to increase the number of colonies per plate. Two samples of raw milk were used as the material for the analyses reported in this table. From the results of studies on the mathematics of bacteria counts made sometime ago *(5)* and the experience gained in making literally tens of millions of agar plate counts in routine milk control laboratories the counts in Table I that would be accepted as most probably correct are those that are based on the plates that developed from 30 to 300 colonies per plate. For Sample I, this would be 20,800 per cc. from the 1:100 dilution, and 31,900, 22,900 and 30,400 average, 26,500 from the 1:100 dilution. Counts from plates that are overcrowded—i.e., carry more than 300 colonies per plate—are low—14,500, 16,500 and 19,000 per cc. The counts in this case show a tendency to increase as the number of colonies decreases, a well known phenomenon understood by bacteriological gardeners. The seeds were sown too thickly and grow better as the number planted per given area is lessened.

Turning now to the plates that carry less than 30 colonies per plate, we find counts that are either decidedly higher than the average of 26,500 accepted above as a probably reasonably correct estimate—i.e., 31,000, 40,000 and 30,000; or decidedly low—i.e., 17,000, 18,000, 14,000, 10,000 and 10,000. These irregular counts are due to distribution errors. In this sample, the dilutions were not carried to the place where extraneous colonies produce noticeable errors.

In Sample 2 the counts begin with plates that carry acceptable numbers of colonies and end with plates where the presence of extraneous colonies causes very inaccurate results. The correct count in this case can be secured by averaging the 1:100 dilution figures—i.e. 21,200, 23,300, 30,900 and 38,700 average 28,500. In the 1:100 and 1:1000 dilutions there is evidence of the same type of distribution error noted above—i.e., counts are sometimes much too high, 56,000 and 50,000; sometimes much too low—i.e., 20,000 and 20,000. Real distribution errors, however, show up in the 1:100,000 dilution. Theoretically there should have been 3 or 4 colonies on the 20 plates. Actually there were 8 resulting in a computed count of zero (much too low) and 300,000, 200,000 and 300,000, all much too high. Probably 4 or 5 of the extra colonies were from dust contaminations; but it may be that the additional dilution broke clumps of bacteria apart so that the colonies arose from bacteria actually present in the milk.

TABLE I.—BACTERIOLOGICAL ANALYSIS OF TWO SAMPLES OF RAW MILK USING TECHNIQUE EMPLOYED IN TESTING PAPERBOARD SUSPENSIONS

Dilutions	10 cc. in	No. Colonies per Plate	Colonies per cc.	Dilutions	1 cc. in	No. Colonies per Plate	Colonies per cc.
1:100	2 Plates	553 and 893	14,500	1:100	2 Plates	103 and 109	21,200
	3 Plates	451 to 610	16,500		3 Plates	53 to 116	23,300
	5 Plates	315 to 446	19,000		5 Plates	49 to 74	30,900
	10 Plates	126 to 287	20,000		10 Plates	12 to 61	38,700
1:1000	2 Plates	156 and 163	31,900	1:1000	2 Plates	11 and 14	25,000
	3 Plates	71 to 82	22,900		3 Plates	3 to 15	22,000
	5 Plates	49 to 73	30,400		5 Plates	4 to 28	56,000
	10 Plates	18 to 33	23,800		10 Plates	2 to 6	27,000
1:10,000	2 Plates	6 and 11	17,000	1:10,000	2 Plates	0 and 5	50,000
	3 Plates	4 to 8	18,000		3 Plates	0 and 1	20,000
	5 Plates	5 to 8	31,000		5 Plates	0 and 1	20,000
	10 Plates	1 to 3	14,000		10 Plates	0 and 1	30,000
1:100,000	2 Plates	2 each	40,000	1:100,000	2 Plates	0	0
	3 Plates	0 and 1	10,000		3 Plates	0 and 2	300,000
	5 Plates	0 to 2	30,000		5 Plates	0 and 1	200,000
	10 Plates	0 and 1	10,000		10 Plates	0 and 1	300,000

Medium: New Standard Agar. Incubation: 37° C. for 48 hours.

Do you wonder that milk laboratories have carefully standardized the technique used in making agar plate counts from milk and that dilutions are made so as to observe the requirement that the only plates used shall be those developing not less than 30 colonies and not more than 300 colonies?

Thus far, the counts discussed were made from milk. Similar figures are given in Table II for a sample of ordinary chipboard such as is used in making cheaper grades of folding boxes. Here certain differences appear that will be discussed later, but, in general, the picture is the same. Curiously, in this sample there seems to be no effect on the count from overcrowding of colonies on the plates. If the 1:10 dilution is selected as giving results that are probably most accurate, the average count would be 43,100 per gram. The counts begin to show evidence of wide variations in the 1:100 and 1:1000 dilution ranging from a low of 40,000 to a high of 140,000. The most interesting plates and counts, however, are those from the 1:1000 and 1:100,000 dilutions. Here the number of colonies on the plates agree with the numbers of colonies found on plates prepared from high quality paperboard such as is used for milk bottle caps and paper milk containers. The errors introduced from the high dilutions and extraneous colonies throws the counts into the hundreds of thousands or millions per gram of board.

From these results you can see why we feel that the technique that yields the highest count is not necessarily the technique that yields the most accurate count. The question immediately arises are such counts as are obtained by diluting pulp suspensions as advocated by Wheaton *(6)* and accepted by the TAPPI committee higher than they should be? The answer is, no one knows. We really think they are too high in most cases; but as we said at the beginning, there is no way of determining directly how many bacteria are actually present in any given sample of board; and so we have no yardstick by which to determine accuracy. Further study may reveal the probabilities in the case more clearly, but this remains for the future.

TABLE II.—BACTERIOLOGICAL ANALYSIS OF ORDINARY CHIPBOARD

Pulp Suspension Dilution	10 cc. in	No. Colonies per Plate	Colonies per Gram of Disintegrated Chipboard
Undiluted	2 Plates	1880 and 1988	38,680
	3 Plates	1155 to 1227	37,190
	5 Plates	668 to 796	36,680
	10 Plates	264 to 466	38,120
1:10	2 Plates	185 and 204	38,900
	3 Plates	112 to 177	42,300
	5 Plates	77 to 107	44,700
	10 Plates	30 to 60	46,500
1:100	2 Plates	21 and 35	56,000
	3 Plates	18 to 82	74,000
	5 Plates	11 to 18	66,000
	10 Plates	1 to 12	56,000
1:1,000	2 Plates	2 and 3	50,000
	3 Plates	1 to 2	40,000
	5 Plates	0 to 6	140,000
	10 Plates	0 to 2	80,000
1:10,000	2 Plates	0 and 1	100,000
	3 Plates	0 to 2	300,000
	5 Plates	0 to 2	400,000
	10 Plates	0 to 4	1,000,000
1:100,000	2 Plates	1 each	2,000,000
	3 Plates	0 and 1	2,000,000
	5 Plates	1 each	5,000,000
	10 Plates	0 and 1	7,000,000

Not all of the difficulties met with in making accurate counts are mathematical in nature. Counting large size objects like the number of persons in this room is a simple problem in arithmetic. Counting small objects, like spores of bacteria in disintegrated paperboard has many complexities.

The problem of making bacterial counts from the water supplies of paper mills and of pulp suspensions at the wet end of the machines offers no special problem to the trained worker, but it should be stated that counts made on the old standard nutrient agar from plates incubated at 37 deg. C., the practice accepted as standard for the control of water purification plants, give a false idea of the number of bacteria actually present in water or pulp suspensions. Additional studies should be made of this problem as it affects the pulp and paper industry before methods are standardized.

The making of accurate counts from the finished paper and paperboard while simpler in some ways than the making of counts from samples taken at the wet end of the machines presents one difficult feature. The ordinary organisms that survive the drier rolls are capable of growth at 37 deg. C., and grow almost as well on the old standard agar as on the new *(7)*. The colonies are larger and more distinct on the new standard agar. From both of these standpoints the counting problem is less complex than when samples from the wet end are examined.

But our bacteriological gardening meets a real difficulty because the bacteria present are largely spore formers. It is as if we undertook to count the plants that would grow from a lot of seeds in which 9 out of 10 objects planted were partially crushed burdock burrs. It should also be assumed that the gardener does not know how much the seeds in the burrs have been separated by the partial crushing of the burrs. Colonies of sporeforming bacteria grow so readily that they overgrow and inhibit the growth of other types of bacteria just as the growth of burdocks crowds out smaller plants.

Because various laboratories have found by comparative analyses that counts from plates on which only a few colonies are present show still more colonies when the pulp is distributed in 5 or 10 rather than 3 plates, it seems probable that even this small number of large spreading colonies inhibit the growth of other colonies. For this reason we have tried a method of controlling spreader growths quite frequently used in bacteriological laboratories. The normal method of controlling spreaders is to invert the plates as they are placed in the incubator. A second way is to use porcelain tops[4] for petri dishes. These are glazed on the upper side only so that the under unglazed surface will absorb moisture.

But before telling you the results of using these tops it should be stated that our studies show that counts from disintegrated paper of the quality used for paper milk containers and milk bottle caps are not invariably higher where 0.1 gram of pulp suspension is distributed in 5 instead of 3 plates; or even when the same amount of inoculum is distributed in 10 instead of 3 plates. In our trials, it was found that 30 out of 39 trials yielded counts that were higher when 5 instead of 3 plates were used; 34 out of 39 trials yielded counts that were higher on 10 plates than from 3 plates.

When the porcelain tops were used, results secured in a series of 80 comparisons from 3 plates with porcelain tops when compared with counts from 3 plates with glass tops, showed 57 of the counts to be higher when made from the plates with porcelain tops. Thirty-three were higher when made from the plates with glass tops, a result that indicates that there

[4] Listed by A. H. Thomas & Co., Philadelphia, and other laboratory supply houses.

was less inhibition of colonies on the plates with the porcelain tops. In 22 out of 44 comparisons between counts obtained from 3 plates with porcelain tops and 5 plates with glass tops, there were more colonies on the 3 plates than on the 5 plates; and 22 cases where the reverse was true. In 10 comparisons out of 32, the counts from 3 plates with porcelain tops were even higher than the counts obtained from 10 plates with glass tops. It should be remembered that in all of these comparisons 5 or 10 plates are sure to show extraneous colonies more frequently than 3 plates; so that some of these larger counts are due to contaminations. In other words, the use of porcelain tops helps to eliminate the differences in count where 3 plates are used in place of 5 plates; and will enable us to avoid the troubles that come from using the extra glassware.

Where similar comparisons were made of counts obtained from pulp suspensions taken at the wet end of the machines there does not appear to be any tendency for the counts from 3 plates with porcelain covers to be higher than those from 3 plates with glass covers as the number of counts that were higher on the 3 plates with porcelain covers was 19 out of 39, practically 50% against 50%; whereas, as given above, the similar comparisons made from plates inoculated with disintegrated paperboard showed 57 counts out of 80 higher when made from the plates with porcelain tops, a 71% against 29% comparison.

Many other comparisons have been made which will be reported in detail elsewhere. Suffice to say that we are convinced not only that we should keep the number of plates used per sample at a minimum for both theoretical and practical reasons but that porcelain tops on petri dishes limit the growth of sporeformers (burdocks) enough to be helpful in making analyses from high-grade board.

This conclusion does not invalidate our previous conclusion that all of the counts obtained from the better grades of paperboard with current methods of making counts are probably higher than they should be. This is particularly true of counts of less than 50 per gram. A much larger proportion of these should be reported as zero than are being so reported.

The first reports of rinse counts from finished milk containers were that between 50 and 80% were sterile. With the needle puncture technique introduced by Mudge and Foord, and with a similar technique introduced simultaneously in our work by J. W. Rice, it has been shown that the counts obtained from rinsings of containers on agar plates are too high. As indicated above, theoretical considerations would lead us to expect a 6 to 30% error just because of the introduction of dust contaminations during the making of agar plates; and these figures compare closely with results as obtained.

Significance of Bacterial Counts

The above discussion of errors in bacterial counts is largely academic from the standpoint of the control official who wishes to determine whether the count from a given sample of board is less than 500 per gram; but it has real and practical value to industrial interests who find it of advantage in this competitive world to be able to show that paper milk containers and milk bottle caps are not only made of clean materials, but that the majority of these containers and caps are so free of bacteria that these paper products will not contribute microorganisms to the contents of the container or bottle.

There has been much unnecessary worry by makers of food packaging materials because of an expectation on their part that they would be required to meet impossibly severe bacterial count standards. It should therefore be emphasized that nothing in our experience thus far indicates that the 500 per gram standard that has been suggested for high grade board is too severe when enforced with normal tolerances for such bacterial count standards.

This discussion of sources of errors in counts permits us to explain the reason why bacteriologists generally prefer a plain count standard rather than one based on logarithmic averages. The latter implies that these estimates of numbers are accurate enough to justify using a mathematical interpretation of results. Bacteriologists know that these estimates of numbers are not accurate enough for this. Hence the lack of interest on their part in mathematical interpretations of results. The method of using logarithmic averages for these counts has never been accepted by the American Public Health Association or by many of our most important health-control groups.

Conclusions

Bacterial counts are made in order to determine where bacterial growth is taking place. Such information is of real value to the pulp and paper industry as losses due to the growth of microorganisms in pipes and pulp suspensions are real and cannot be prevented without constant vigilance. Public health workers have found bacterial count standards a useful tool for detecting undesirable conditions in many types of food and in water supplies.

Counts are not used as a means of finding disease germs. In water purification plants they are used to determine the efficiency of the purification. In milk plants they are used to determine the efficiency of the pasteurization process. They are used on samples of milk as delivered to determine whether it is fresh and of good keeping quality. They are used on such samples, and on samples of milk as delivered at receiving stations by producers as a means of telling something about the past history of the milk.

It is chiefly for the latter purpose that their use has been suggested as a means by which control officials can identify mills that do not maintain an efficient microbiological control or that are using inferior stock. Bacterial counts are not used as a means of finding dirt. Dirt and bacteria are two different things. To be sure, bacteria occur by the millions per gram of dirt (soil) and they occur equally abundantly in filth (sewage and the like). However, they occur in our cleanest and most wholesome foods such as buttermilk, cheese, sauerkraut. The dill pickle that you ate, or that cocktail that you drank contained millions of microorganisms per gram at one time, else you would not have considered it fit to eat or drink. Many of the bacteria that grow in pulp suspensions or on pipes cannot grow in dirty water. The fact that bacteria may grow by the millions per gram in groundwood pulp or in other pulp suspensions is no indication of dirty conditions. The fact that pulp suspensions make a good medium in which to grow bacteria would be expected by all public health workers or microbiologists that give the matter a thought; and it is no reflection on the industry as some seem to think.

There are many industries that deal with products that decompose readily and each has its special problems.

We believe bacterial counts will prove to be a useful tool both in the hands of the pulp and paper industry and in the hands of officials concerned with protecting the public against unsuitable packaging of foods, *provided* they are made by competent technicians and they are used by men who understand both their value and their limitations.

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Factors in Fourdrinier Wire Corrosion*

By Harry G. Specht[1]

Abstract

The three rate factors that affect the corrosion of wires in papermaking are: (1) acidity, (2) temperature, (3) air saturation (degree of aeration). Of these three, air saturation is of most importance and effect; temperature of second importance, and acidity of third, or of least importance.

The different forms of corrosion are: direct chemical action, pitting or galvanic (2 metal cell) action, dezincification, and corrosion cracking with fatigue. The rate of any one of the above forms of corrosion is affected by one or more of the rate factors. Each metal reacts differently for a given set of conditions.

The Three Rate Factors

The three rate factors that affect the corrosion of wires in papermaking are: (a) acidity, (b) temperature, and (c) air saturation (degree of aeration). Of these three, air saturation is of most importance and effect; temperature of second importance, and acidity of third, or least, importance.

Paper mills operating with a constant acidity or pH throughout the year will show corrosion of wires as temperature of water rises and will show increased corrosion with low water and when there is an increase of air saturation in water.

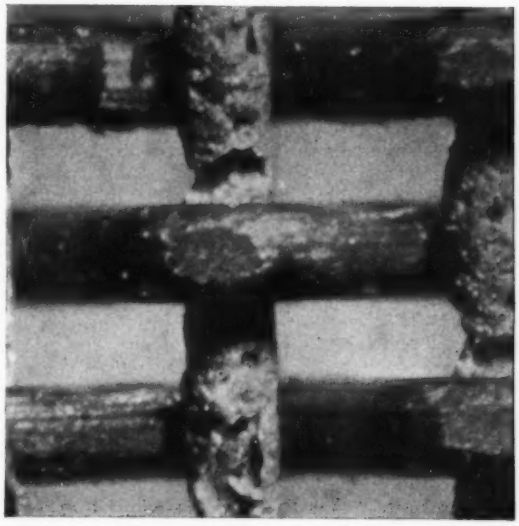


FIG. 2

* Presented at the Annual Meeting of the Technical Association of the Pulp and Paper Industry, Roosevelt Hotel, New York, N. Y., Feb. 17-20, 1941.

[1] Vice President and General Manager, Eastwood-Nealley Corporation, Belleville, N. J.

FIG. 1

What the Laboratory Tests Show

Laboratory tests show that with a given acid solution, corrosion increased from two to four times with a rise of 50 deg. F. of temperature, and the corrosion rate was increased from 10 to 20 times by introducing air into the solution. The different results were obtained with different alloys, different acid solutions and strengths of solutions, and varying volumes of admitted air.

Corrosion Types

The different forms of corrosion are: direct chemical action, pitting or galvanic (2-metal cell) action, dezincification, and corrosion cracking. Any one of the above forms of corrosion is affected by one or more of the rate factors. Each metal reacts differently for a given set of conditions.

Direct chemical reaction occurs when acids and reactants combine with the metal to form nonmetallic salts. Air, the most prevalent form of an oxidizing agent, will greatly accelerate this action.

When two dissimilar metals are immersed in an electrolyte and the exposed ends electrically connected, a current flows through the electrolyte from one metal (anode) to the other metal (cathode) resulting in a galvanic action, causing corrosion of the anode. Salt water is a good electrolyte so that we can have corrosion by galvanic action where it is present. Galvanic action is increased by temperature rise or air agitation. Many cylinder mills operating with alkali solutions have wire failures due to galvanic action.

Pitting can be defined as a spotting in well defined areas, generally small. It is caused by inclusions which corrode easily by galvanic action accelerated by oxidizing agents. Where there is an uneven distribution of strains, pitting more readily occurs. Pitting may occur in any alloy.

Figure 1 shows corrosion by pitting. The wire shown is a steel-nickel-chromium-alloy, in the form of a sewing wire, joining two shoot wires of an 80% copper, 20% zinc alloy, with adjacent warp of 93% copper, 7% tin alloy. As there is no corrosion of the warp and shoot wires, the corrosion in the form of pitting was confined to the sewing wire.

Dezincification occurs in Fourdrinier wires due to the use of copper-zinc alloys in weft or shoot wires. The most favorable conditions for this type of corrosion seems to be a slightly acid condition, or a salt solution and the presence of oxygen. A rise of temperature plus the presence of air accelerates dezincification.

Figure 2 shows dezincification. The warp is of bronze 93% copper, 7% tin, and the weft or shoot wire of brass, copper 80% and zinc 20%. The bronze warp is not affected. The weft wire is badly pitted due to the zinc leaving the alloy. The bleaching chemicals used in the pulp combine with the zinc. Zinc hydrosulphite will dezincify the brass weft wires.

The last form of corrosion, corrosion-fatigue cracking, is one that may be ever present. Corrosion (of any form) attacks first the surface of the metal and, combined with fatigue, the action proceeds more rapidly due to the development of cracks which cause a further penetration of the corrosion. This form of corrosion comes up in connection with excessive souring. The presence of air will increase rate of attack and decrease time to failure.

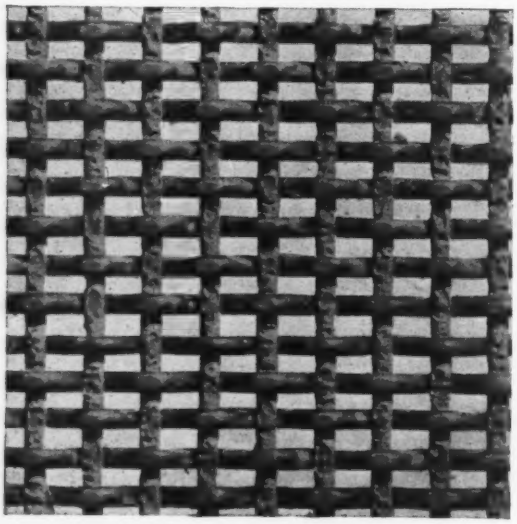


Fig. 3

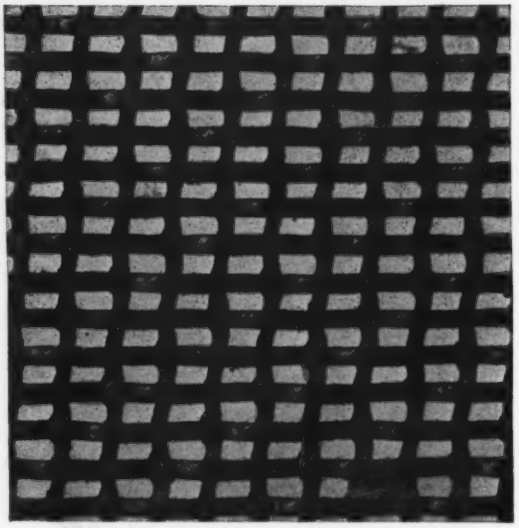


Fig. 4

Effect of Hydrogen Ion Concentration

The hydrogen ion concentration factor causes little trouble in shortening wire life when temperatures are below 60 deg. F. With a given pH, the corrosion factors will increase as the temperature rises towards 80 deg. F., and with low water and increased air absorption—corrosion is greatly accelerated to an alarming degree.

Figure 3 shows a wire operating with a furnish having a pH of 6, at a temperature of 80 deg. F. It shows an accelerated condition due to temperature. Direct chemical reaction and dezincification may be involved.

Figure 4 shows a wire operating with a pH of 5.5 at a temperature of 83 deg. F. with low water, having a high saturation of air. The warp of bronze is slightly corroded and the weft of brass is highly corroded. In the winter months, normal wire life is six weeks. This wire ran ten days in the summer month of July, at a low stream water condition, and at a high temperature. The life of the wires will go up and down in relation to drop and rise in temperature and with the rise and drop of water volume in the stream. Note the erosion of the weft wire due to the stock carrying away the metal as it corrodes.

Conclusions

To correct these conditions, steps should be taken to de-aerate water and remove dissolved air. How this can be best accomplished is a subject for discussion. Temperatures should be kept as low as possible. In a paper mill, water is constantly being aerated and some thought should be given to the subject of de-aeration in general practice. This is the greatest factor we have to contend with in wire corrosion.

We have collected many samples of wires throughout the past five years from all parts of the country. We have tried to draw our conclusions from the general picture presented to us, through the studies we have made in the mills and with an understanding of the prevailing operating conditions.

Prevention of Damage to Newsprint in Transit*

By R. A. Fasold[1]

Abstract

The causes and prevention of damage to newsprint rolls in transit are discussed.

Before we get into the newsprint specialization, let me give you a brief outline of how the prevention of loss and damage functions on our American Railroads.

First there is a National Committee on Prevention of Freight Loss and Damage, consisting of fifteen members, composed of twelve members of the Freight Claim Division and one representative of our Mechanical and Car Service Divisions and the Railway Express Agency. The duties of the Committee are to study the causes of loss and damage in connection with freight traffic and to suggest measures for their prevention. It recommends methods for loading commodities, which are passed upon by the General Committee of the Operating-Transportation Division before publication.

Next, each member road of the Association of American Railroads, which includes our Canadian friends, has delegated an officer to study prevention and apply necessary remedial measures.

The Association of American Railroads maintains a Freight Container Bureau, with headquarters at 30 Vesey Street, New York City, to handle packaging problems. This Bureau has a limited number of technically trained engineers who are at your service —free for the asking.

Loading of Freight Cars

Last week, June 10, our National Committee made its annual report to the Freight Claim Division in Denver, Colorado, and under the heading of "Newsprint Paper" said:

"Crushed cores and out-of-round rolls are among the principal causes of complaint. Tests by the industry have developed that deformation of the average roll begins under 175 pounds pressure per inch of roll length and rapidly increases under additional pressure. Much of this can be eradicated by more careful handling of cars, but there are other contributing factors to be considered.

"The method of loading is important. Study indicates that toe blocks are generally not recommended, although a few receivers still require their use. Very good results have been had by staggering the rolls, which method appears to more evenly distribute the stress under impact, and this method is recommended when it will not materially reduce the tonnage.

"Generally, the method of loading is not left to the discretion of the mills but is controlled by the purchaser. One shipper, of which we have knowledge, loading many cars, found the least damage by tying only the key rolls in the doorway of the car and stowing the other rolls throughout the car reasonably tight without bracing or blocking. Many shippers have gone to the double-unit, floating load with equally good results.

"Unloading from cars and handling in the press rooms are factors to be considered and when there is frequent complaint of damage, an investigation of these methods is recommended."

That was the National Committee's report, following which, your speaker was called upon to elaborate on the loading methods for newsprint.

I immediately attacked the toe-block is no uncertain terms. The best use to which you can put toe-blocks is fire-place wood at shipping point.

Think, for a moment, what happens when you put a toe-block in front of a roll of paper in a box car. Here we have a miniature roll of newsprint. Let us say it weighs between 1700 and 1800 pounds. It is 66 or 68 inches high and we put a small block at the floor line, secured by a few spikes. *And,* in addition to the 1800 pounds in the blocked roll we have 27,000 or 30,000 pounds back of it. In other words, we are trying to hold that weight against the law of inertia and with the center of gravity about thirty inches above the block. It is contrary to all rules of physics and dynamics and simply will not work.

Yes, you say, but we put some toe-blocked loads through in good condition every day and you are absolutely correct because those cars were very carefully handled. I'll get around, in a minute or two, to the handling of cars, and I won't pull any punches. With me, the cards are face up on the table.

As freight train speed increases, it is now 62% faster than in 1920, as locomotive power increases, it is now 50% greater than in 1920, as the yard and terminal time of trains decreases—all of which you, as shippers, are demanding—speed and more speed, we must take steps to meet this faster tempo.

Let's get back to loading. There are three alternate loading methods and in my humble opinion, the order of their effectiveness is:

1. The *loose* load without any manner of blocking or bracing, except bands or wood across the car doors, to form a continuous car wall from one end to the other and to prevent rolls from shifting against car doors with the possibility of train accident.

2. The *key-roll* method in which only the doorway rolls, two, three or five of them, are tied together by metal bands or wire.

3. The *floating unit* load in which the rolls in each end of the car are tied together in two separate units, one unit in each end.

Under any of these three methods, the rolls should be staggered to break the direct line of stress.

The railroads are furnishing paper mills the very best class of cars possible and I am told there is no complaint along that line, however, during winter months, we get some complaints from receivers be-

* Presented at the Annual Meeting of the American Pulp and Paper Mill Superintendents Association, Poland Spring, Me., June 17-19, 1941.

[1] Special Representative, Freight Claim Division, Association of American Railroads, Chicago, Ill.

cause of wet paper, resulting from fine snow being sucked into the car at the door ledge area due to a very small crack at the bottom and the high speed of trains.

Some cars are equipped with soft rubber edging around the doors but most are not, and it is recommended that you fold several thicknesses of wrapper paper over the door ledge, folding upward when closing the door in such a way that when the door is closed the paper will lay against the door and keep out the elements.

Factors Not Controlled by Mill Men

There are many factors affecting damage to newsprint that can not be controlled by mill or railroad men, and I refer to destination and pressroom practices. We are faced, at certain destinations, with a supercritical inspection, particularly respecting flat rolls which I prefer to call out-of-round rolls, as none of them are flat.

The tension of the web has a very important bearing on our experience with out-of-round rolls at destination, but that is *your* job and I trust you are watching it.

Unloading Freight Cars

When chronic damage is reported with a particular publisher the delivering carrier has been asked to investigate destination conditions respecting unloading from cars, the use of prying paddles, the type and condition of hand trucks, the toggles used in pulling rolls over onto lipped trucks, are there any obstructions on the motor truck that might damage rolls, does paper go into pressroom on a chute, do rolls hit an obstruction at the end of a chute, is the paper rolled over uneven or unclean pressroom floors, etc., etc.

Printing presses, like freight trains, are continually being speeded up and from 40,000 to 45,000 complete newspapers per hour is not unusual. The higher the rate of speed of the presses the greater the whip in the leads and the more likelihood of a break, if the roll is not perfectly round.

We are well aware that not all web breaks in the press are due to deformation of rolls. That's a story in itself, which we haven't time to get into.

You will gather from what I have said that a lot of factors enter into this picture of preventing damage to newsprint which cannot be developed by policing the handling of freight cars nor by installing impact shock recording devices in cars.

Railroads in the Middle

As you can readily see, the railroads are more or less in the middle, figuratively as well as literally. We all hear a lot about rough handling of cars but nobody hears more about it than the railroad men.

In the course of my official duties, it is necessary to attend many railroad meetings and it has been a long time since any of these gatherings failed to discuss the elimination of rough handling of cars.

Two weeks ago today the American Association of Railroad Superintendents met in Chicago, and we listened to a report of a special committee on the elimination of rough handling, at the close of which it was resolved that an intensive campaign be instituted by all members at every principal terminal to see that cars do not receive overspeed impacts.

Humping and Routing of Freight Cars

We have known for a long time, through impact register tests, that rough handling occurs most frequently in yard and terminal operations, in fact, 95% of excessive shocks recorded occurred in terminals.

Does not that fact indicate to you shippers that it would be to your advantage to use the most direct route to destination? I have seen some of the most circuitous routing on cars of newsprint paper that could be possible, sending them all around the country in order to give as many lines as possible a dip into the revenue.

There seems to be a general misapprehension among the trade as to the damage caused in classifying cars through hump yards. It was said, in a meeting not long ago, by a shipper of newsprint that damage results by reason of the grade of the hump over which cars are moved. Our investigation does not bear out this statement.

There is also a general misapprehension as to the per cent grade, various figures being cited by laymen which were checked into and, from replies received, covering 80 hump operations in the United States, the steepest per cent grade is 6, ranging on down to a fraction of 1%.

The average per cent grade coming off the apex of a hump is four, and the average grade in receiving tracks of the classification yard is 0.2%.

As proof that the humping of newsprint paper cars does not in itself cause damage, many cars have been humped and later checked out at destination without damage. The fact that a car goes over a hump therefore is definitely known not to cause damage but, if excessive shock occurs to the load we have, in many instances, out-of-round rolls and, in some instances, crushed cores.

This question of overspeed impacts is receiving more attention today by our member roads than any other one subject and I can truthfully assure you that every reported instance is thoroughly investigated and individual responsibility determined whenever possible.

Direct remedial action is being taken to correct yard grades where this is found necessary and to the extent possible under present financial conditions. Many cars are being equipped with heavy duty draft gears to cushion shock, special underframes are being applied to cars on many lines, as conditions permit, and I assure you that every feasible step is being taken to still further improve rail freight service to our shipping and receiving public.

Conclusion

In closing, I would like to read a pledge to America:

"In the operation of a continent-wide system of rail transportation, each railroad has responsibilities to every other railroad, and all of them together have the responsibility of providing the nation's essential low-cost mass transportation. The Member Roads of the Association of American Railroads, therefore, assembled in annual meeting, at New York City on November 13, 1940, do hereby renew their pledge to those whom they serve, that individually and in cooperation with one another and with the Government of the United States, they will continue to meet to the full the demands of commerce and the needs of national defense."

Imports of Paper and Paper Making Stock

Giving Manifests of New York, Boston, Philadelphia and Other Ports of Newsprint, Wrapping, Writing, Coated, Blotting, Tissue, Strawboard; Bleached Sulphite More Acute—Some Grades of Old Waste Lower.

Effective September 30, 1939, under Treasury Decision 49,970, all publications, exchanges and trade associations, were denied access to import manifests at the New York Customs House. The Paper Trade Journal and other interested parties have vigorously protested this ruling, and as soon as the order of the Treasury Department is modified or rescinded, full publication of all manifests will be resumed in these columns. In the interim, the Paper Trade Journal is making every possible effort to gather all available information from manifests, at various outside sources.

NEW YORK IMPORTS

WEEK ENDING JUNE 28, 1941

SUMMARY

Newsprint .....1,052 rolls
Printing paper .....23 cs.
Miscellaneous paper .....4 cs.

NEWSPRINT

H. G. Craig Co., Inc., ———, Donnacona, 326 rolls.
H. G. Craig Co., Inc., ———, Donnacona, 379 rolls.
H. G. Craig Co., Inc., ———, Donnacona, 347 rols.

PRINTING PAPER

Wells Fargo & Co., ———, Vera Cruz, 1 cs.
———, ———, Glasgow, 22 cs.

MISCELLANEOUS PAPER

Marr Duplicator Co., Inc., ———, Yokohama, 4 cs.

RAGS, BAGGINGS, ETC.

Padawer & Co., ———, Shanghai, 585 bls. cotton waste.
Camden Fibre Mills, ———, Shanghai, 200 bls. cotton waste.
Brandwein Mazur & Co., ———, Shanghai, 225 bls. cotton waste.
O. Gerdau Co., ———, Shanghai, 50 bls. cotton waste.
Green Textile Associates, ———, Shanghai, 200 bls. cotton waste.
———, ———, Santos, 265 bls. cotton linters.
———, ———, Glasgow, 239 bls. paper stock.
Hercules Powder Co., ———, Santos, 486 bls. cotton linters.
———, ———, Glasgow, 135 bls. paper stock.

GLUE STOCK

Milligan & Higgins Corp., ———, Buenos Aires, 23 bls.

WOOD PULP

———, ———, Sheet Harbor, 1,743 bls.

CASEIN

American British Chemical Supplies, ———, Buenos Aires, 417 bags, 25,020 kilos.
Packing Products Co., ———, Buenos Aires, 455 bags, 25,020 kilos.
H. S. Cramer & Co., ———, Buenos Aires, 834 bags, 50,040 kilos.

BOSTON IMPORTS

WEEK ENDING JUNE 28, 1941

E. C. Andres, ———, Tientsin, 200 bls. cotton waste.
Green Textile Associates, ———, Shanghai, 50 bls. cotton waste.
Elliott Addressing Machine Co., ———, Yokohama, 12 cs. paper.

LOS ANGELES IMPORTS

WEEK ENDING JUNE 28, 1941

C. W. Stockwell & Co., Ltd., ———, Kobe, 5 crates wallpaper.
Oscar Leisner, Inc., ———, Yokohama, 15 ctn. rice paper.

SAN FRANCISCO IMPORTS

WEEK ENDING JUNE 28, 1941

Kirchner Bros., ———, Kobe, 37 ctn. rice paper.
S. Ishimitsu & Co., ———, Kobe, 4 cs. filter paper.

Robertson Co. Gives Vacation

The Robertson Paper Box Company, Montville, Conn., has sent the following notice to employees: "This year industry must produce the maximum because of the urgent National necessity. Mindful of this and also considering the welfare of our employees, we believe our employees should have a vacation. Therefore, the entire plant will be shut down from Saturday morning, June 28, to Monday morning, July 7.

"Each employee who has been continuously in the employ of the Company for the twelve months ending June 27, 1941, will be given vacation pay of 40 hours based on his or her average hourly earnings this year, excluding overtime. Salaried employees will be given vacation pay as previously. It will be necessary for a very few employees to work during this period, and those entitled to a vacation with pay, as above, will be given it at a later date.

"This is the second year that vacations have been given on this basis, and the Company is very glad to be able to do it. While it is not a fixed policy, we hope that conditions will make it possible to continue it in the future. It is our sincere wish that everyone will have a grand vacation and return refreshed and ready for the strenuous days ahead."

Maine-N. H. TAPPI Group to Meet

Following the very successful meeting of the proposed Maine-New Hampshire Section of the Technical Association of the Pulp and Paper Industry held last fall another meeting is being arranged which will be held at Orono, Maine, on September 26-27, 1941.

This meeting will feature the formal opening of the new chemical engineering building of the University of Maine. The Maine Section of the American Chemical Society and all graduates of the University of Maine in chemistry and chemical engineering will be invited to attend. A number of outstanding men from the chemical engineering profession and the pulp and paper industry have been invited as speakers.

Besides the general session there will be group meetings on Friday and Saturday, a banquet on Friday evening and a luncheon on Saturday. This will be followed by the Maine-Rhode Island football game in the afternoon.

Reservations should be made early at either the Bangor House or the Penobscot Exchange Hotel in Bangor, Maine, since a very large attendance is expected.

New York Paper and Pulp Market Review

Paper Production At Capacity With Demand Very Heavy For Many Grades of Paper and Paper Board — Paper Stock Prices Fairly Well Stabilized With All Quotations Unchanged This Week.

Office of the PAPER TRADE JOURNAL,
Wednesday, July 2, 1941.

Heavy demand for paper and paper products, with sales volume in the wholesale market at record levels, is reflected in reports received from many manufacturers' representatives, jobbers, and general paper merchants this week.

This high level is basically shown in the index of general business activity, which rose to 131.4% for the week ended June 21, from 130.7% for the previous week, compared with 109.2% for the corresponding week last year.

Paper production for the week ended June 21 was estimated at 99.7%, compared with 93.1% for 1940, with 75.2% for 1939, with 64.1% for 1938, and with 88.6% for the corresponding week for 1937.

Paper board production for the week ended June 21 was 88.0%, compared with 79.0% for 1940, with 66.0% for 1939, with 59.0% for 1938, and with 79.0% for the corresponding week for 1937.

The heavy demand for paper and paper products is solidly based upon the increasing use of many grades, including the steadily increasing demand for converted items. More items manufactured from paper are continually being made and the national defense effort is generally viewed as greatly stimulating the use of paper and its many products. This increase in the utility of paper made from wood pulp is particularly notable in some grades of paper board.

General industry and trade has shown substantial gains in the first half of the current year, but somewhat less than some economists had expected. The increase, as shown in the index of the Federal Reserve Board at the end of May, was 8% higher than in December; the gain in durable goods was 7%, while non-durable goods was 9% higher. As the industrial output for defense needs must rise substantially higher in the future, the current ratio of production is good, although it indicates a rather slow start. The May index at 124.7% for employment and 141.9% for payrolls, are all-time high figures.

The recommendation of the Price Administrator, Leon Henderson, naming maximum prices for some grades of paper board for the present, has resulted in a more or less stabilization of prices and the voluntary fixing of prices by individual dealers in paper stock, has temporarily stabilized prices on the lower grades of waste paper.

All current market quotations are very firm, with a strong demand exerting pressure for higher prices. It is, of course, difficult to peg prices, but the attempt has been made to prevent a too rapid and speculative price rise. It may be assumed from current reports that the Administration hopes to eventually establish a new system of arbitrary control, similar to the old NRA which brought more stability to some industries, including the paper industry.

Chemical Pulp

No important change in the chemical pulp market has been reported at this date. Production continues high under the insistent demand for all grades of chemical pulp. Inquiries for prime grades of unbleached sulphite indicate the scarcity in this grade, and also in bleached kraft pulp. Third quarter prices at unchanged contract quotations will prevail until the last quarter prices are announced in September.

Rags

No important change has been reported in the rag market this week. Demand continues steady with prices firm on all grades. The roofing grades continue active, with no change in prices.

Old Rope and Bagging

Steady mill buying continues in old Manila rope. In view of the scarcity of supplies, which has prevailed for months, and the active mill demand, pressure for higher prices is expected to bring an upward revision from the prevailing price of around $6.00.

Trading in old bagging is active. Prices are firm and limited supplies continues to maintain a strong market situation in scrap burlap.

Old Waste Paper

Paper stock prices continue steady, with quotations on the three basic grades fairly well stabilized at this date. Reports from this market indicate some doubt in the trade whether the government's attempt to fix maximum prices will have the desired result. Most dealers, trade reports affirm, are cooperating quite well to establish a voluntary price level at reasonable quotations. Prices for this week are unchanged.

Twine

No important change in the market situation in twine has been reported this week. The market is strong, demand continues heavy and many manufacturers are reported to be having difficulty in supplying the heavy current demand for most grades of hard and soft fiber twines. Prices are firm.

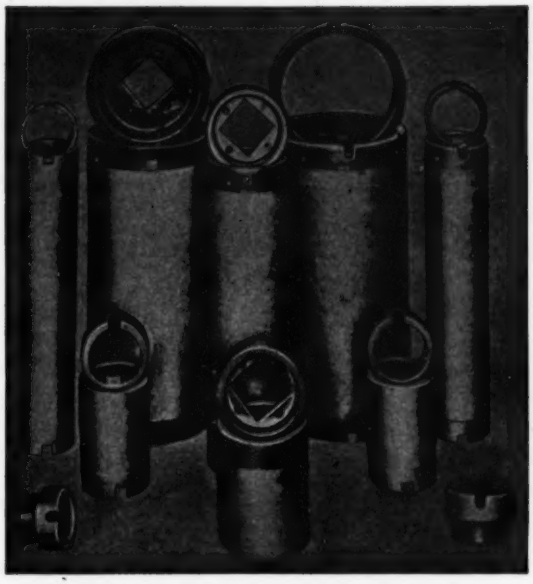
Waste Paper Prices Stabilized

[FROM OUR REGULAR CORRESPONDENT]

WASHINGTON, D. C., July 2, 1941—The waste paper industry has agreed to keep prices at present levels for the time being pending investigation of the prospects that sufficient quantities of paper will come on the market at these quotations.

This was announced by Leon Henderson, director of the Office of Price Administration and Civilian Supply, after a meeting with leading representatives of the industry. Another meeting will be held late in July to again canvass the situation, Henderson said.

"Waste paper is an important raw material in the manufacture of paper and paper board and full production is needed to meet demands of the defense program plus civilian needs," he stated. "Industry representatives have agreed to put forth their best efforts to increase the supply."



ELIXMAN

CAPS

Straight wound paper cores made in sizes from 2" to 10" inside diameter with any thickness wall required.

Long draw protected slot caps of heavy gauge steel in all standard sizes.

Heavy duty caps with reenforced square hole. This patented feature of reenforcement gives added strength and durability.

CORES

Samples of caps or cores will be gladly submitted

ELIXMAN PAPER CORE COMPANY, INC.
CORINTH, N. Y.

The Sorg Paper Co., Middletown, Ohio, uses this 37-foot Kalamazoo Glazed Tile Chest adapted for the Shartle Bros. "Agi-Flow."

KALAMAZOO TILE CHESTS

Low storage cost, smooth walls inside and out for quick cleaning, and carefully designed adaptation to pump delivery and agitation for stock storage and bleaching — those are the advantages that make Kalamazoo Glazed Tile Chests a good business investment.

Any Kalamazoo Chest can be built to your individual requirements, and delivered promptly. Send for complete information.

Pioneers of Kalamazoo Vitrified Glazed Tile

GLAZED TILE

KALAMAZOO TANK & SILO CO.
KALAMAZOO, MICHIGAN

WOOD

MISCELLANEOUS MARKETS

Office of the PAPER TRADE JOURNAL,
Wednesday, July 2, 1941.

BLANC FIXE—Prices on blanc fixe are firm and unchanged and conform to prevailing market levels. The pulp is currently quoted at $35 per ton, in barrels, at works; the powder is currently quoted at $50 per ton, f.o.b., works. Demand reported moderate for the week.

BLEACHING POWDER—Quotations on bleaching powder are firm. Demand reported active for the week. Bleaching powder is currently quoted at $2 per 100 pounds, in drums, at works.

CASEIN—Prices on casein are firm, with prices a little changed for the current week. Standard domestic casein, 20-30 mesh, is currently quoted at 21 cents per pound; 80-100 mesh, at 21½ cents per pound. All prices in bags, car lots. Argentina casein, 20-30 mesh, is currently offered at 20 cents per pound. No quotations on French casein.

CAUSTIC SODA—Quotations on caustic soda are firm and continue unchanged at prevailing market prices. Demand reported active. Solid caustic soda is currently quoted at $2.30 per 100 pounds; flake and ground at $2.70 per 100 pounds, in drums, at works.

CHINA CLAY—Prices on china clay are firm and conform to prevailing market levels. Demand reported moderate at this date. Domestic filler clay is currently quoted at from $7.50 to $15 per ton; coating clay at from $12 to $22 per ton, at mines. Imported clay is currently offered at from $13 to $25 per ton, ship side.

CHLORINE—Quotations on chlorine are firm and unchanged. Market strong. Shipments reported inadequate to demand this week. Chlorine is currently quoted at $1.75 per 100 pounds, in single-unit tank cars, f.o.b., works.

ROSIN—The rosin market is reported firm for the week with prices lower on some grades. "G" gum rosin is currently quoted at $1.89 per 100 pounds, in barrels. Savannah "FF" wood rosin is currently quoted at $1.89 per 100 pounds, in barrels, New York. Seventy per cent gum rosin size is quoted at $2.57 per 100 pounds, f.o.b., works.

SALT CAKE—Prices on salt cake are firm and nominal. Demand active. Domestic salt cake is currently quoted at $16 per ton, in bulk; chrome cake at $16 per ton. All prices in car lots, f.o.b., shipping point. The quotation of $16 per ton imported salt cake is nominal.

SODA ASH—Quotations on soda ash are firm and continue to conform to prevailing market levels. Demand reported active for the week. Prices on soda ash in car lots, per 100 pounds, are as follows: in bulk, $.90; in paper bags, $1.05; and in barrels, $1.35.

STARCH—Prices on corn starch are more firm and are reported unchanged for the current week. Pearl is currently quoted at $3.10 per 100 pounds; powdered starch at $3.20 per 100 pounds. All prices in bags, car lots, f.o.b., Chicago.

SULPHATE OF ALUMINA—Quotations on sulphate of alumina are firm. Demand reported active for the current week. The commercial grades are currently quoted at $1.15; iron free at $1.60 per 100 pounds. All prices in bags, car lots, f.o.b., works.

SULPHUR—Prices on sulphur are firm and conform to prevailing market levels. Annual contracts are currently quoted at $16 per long ton, f.o.b., mines. Spot and nearby car lots are quoted at $19 per ton.

TALC—Quotations on talc are firm and continue unchanged at prevailing market prices. Domestic talc is currently quoted at from $15 to $21 per ton, at mines. No quotations on imported talc.

MARKET QUOTATIONS

Paper

(Delivered New York)

News, per ton—			
Roll, contract	$50.00	@	—
Sheets	58.00	"	—
Kraft—per cwt.—Delivered Zone A			
Northern, Extra Quality	$5.25	@	$6.00
Superstandard	4.87½	"	5.25
Northern Standard Wrapping	4.50	"	5.00
Standard Wrapping	4.50	"	—
Tissues—Per Ream—Carlots			
White No. 1	.97½	"	—
White No. 1 M. G.	.95	"	—
White No. 1½	.80	"	—
White No. 2	.75	"	—
Anti-Tarnish M. G.	.80	"	—
Colored	.85	"	—
Kraft	.87½	"	—
Manila	.77½	"	—
Unbl. Toilet, 1 M.	3.75	"	—
Bleached Toilet	5.26	"	—
Paper Towels, Per Case—			
Unbleached, Jr.	2.10	"	—
Bleached, Jr.	3.60	"	—
Manila—per cwt.—C. l. f. a.			
No. 1 Jute	8.75	@	10.75
No. 1 Manila Wrapping, 35 lb.	5.50	"	5.75
No. 2 Manila Wrapping, 35 lb.	5.25	"	5.50
Boards, per ton—			
News	42.50	@	—
Chip	42.50	"	—
Sgl. Mla. Ll. Chip	57.50	"	—
White Pat. Coated	72.50	"	—
Kraft Liners	55.00	"	—
Binders Boards	80.00	"	—

The following are representative of distributors' resale prices:

Rag Content Bonds and Ledgers—White, Assorted Items, Delivered in Zone 1:

	Bonds		Ledgers
100% Rag Ext. No. 1	$39.10 @ $46.00		$40.25 @ $47.25
100% Rag	31.05 " 36.50		32.20 " 37.75
85% Rag	.... "		29.90 " 35.00
75% Rag	23.60 " 27.75		24.75 " 29.00
65% Rag	.... "		21.65 " 26.25
50% Rag	17.55 " 21.50		18.70 " 22.75
25% Rag	14.65 " 17.75		15.80 " 19.25

Colors at $1.00 cwt. extra.

Sulphite Bonds and Ledgers—White, Assorted Items. Delivered in Zone 1:

	Bonds		Ledgers
No. 1	$9.35 @ $11.50		$11.55 @ $12.75
No. 2	8.50 " 10.25		9.65 " 11.75
No. 3	8.05 " 9.25		9.20 " 11.25
No. 4	7.70 " 9.50		8.90 " 10.75

Colors $1.00 cwt. extra.

Free Sheet Book Papers—White, Cased Paper.

Delivered in Zone 1:

No. 1 Glossy Coated	$11.90	@	$13.50
No. 2 Glossy Coated	10.35	"	11.75
No. 3 Glossy Coated	9.55	"	11.00
No. 4 Glossy Coated	9.15	"	10.50
No. 1 Antique (watermarked)	9.05	"	10.50
No. 2 Offset	8.40	"	9.75
A Grade E. F.	8.20	"	9.50
A Grade S. & S. C.	8.45	"	9.75
B Grade E. F.	7.65	"	8.75
B Grade S. & S. C.	7.90	"	9.00
C Grade E. F.	7.35	"	8.50
C Grade S. & S. C.	7.60	"	8.75
D Grade E. F.	7.10	"	8.25
D Grade S. & S. C.	7.35	"	8.50

Ivory & India at $.50 cwt. extra.

Mechanical Pulp

(On Dock, Atlantic Ports)

No. 1 Imported—	
Moist	No prices
Dry	No prices

(Delivered)

No. 1 Domestic and Canadian	40.00	@	42.00

Chemical Pulp

(On Dock, Atlantic, Gulf and West Coast Ports)

Bleached Sulphite (Domestic and Foreign)—			
Prime Bleached Sulphite	3.72½	@	3.87½
Prime Qualities—			
Easy-Bleaching Sulphite	3.17½	"	3.75
Strong Unbleached Sulphite	3.17½	"	3.75
News Grade, delivered Unbleached Sulphite	61.00	"	64.25

(On Dock, Atlantic Ports)

Kraft Bleached	4.12½	"	——
Kraft Light & Strong	3.75	"	4.15
Kraft No. 1	3.60	"	4.00

(F. o. b. Pulp Mill)

Kraft Domestic and Canadian	2.75	"	3.37½

(Delivered)

Soda Bleached	3.30	"	——

Add 60 cents per short ton, dock charges for Albany; $2.50 for Lake Ports East and $3.50 for Lake Ports West of Mackinac Straits.

Domestic Rags

New Rags

(Prices to Mill f. o. b. N. Y.)

Shirt Cuttings—			
New White, No. 1	6.00	@	6.25
Silesias No. 1	4.25	"	4.50
New Unbleached	6.00	"	6.25
Blue Overall	4.25	"	4.75
Fancy	2.25	"	2.50
Washables	2.00	"	2.15
Mixed Khaki Cuttings	2.50	"	2.75
O. D. Khaki Cuttings	3.00	"	3.15

Old Rags

White, No. 1—			
Repacked	3.10	"	3.35
Miscellaneous	2.35	"	2.65
White, No. 2—			
Repacked	2.50	"	2.75
Miscellaneous	2.00	"	2.25
Thirds and Blues—			
Repacked	1.25	"	1.35
Miscellaneous	1.10	"	1.25
Roofing Rags—			
No. 1	1.30	"	1.35
No. 2	1.20	"	1.25
No. 3 (bagging)	.95	"	1.00
No. 4	.90	"	.95
No. 5A	.90	"	.95

Foreign Rags

All prices nominal.

New Rags

New Dark Cuttings	2.25	@	2.40
New Mixed Cuttings	2.00	"	2.20
New Light Silesias	5.50	"	5.75
Light Flannelettes	5.50	"	5.75
New White Cuttings	7.00	"	7.50
New Light Oxfords	4.00	"	4.50
New Light Prints	3.00	"	3.25

Old Rags

No. 1 White Linens	7.50	"	8.50
No. 2 White Linens	6.50	"	7.50
No. 3 White Linens	4.50	"	—

. . . HERE'S THE WAY ORR PUTS A NAP ON A FELT

Little thistle-like teasels, specially grown for Orr Felt in Oregon, are placed on a revolving drum. Their stiff points dig into the felt as it passes by, raising the wool fibres to form a nap.

This operation is far more difficult than it may appear. For one thing, it requires a trained operator, like this twenty-year veteran, to handle the controls. Then, each different type felt requires a different treatment—depending on the type of nap desired.

The care taken to nap an Orr Felt correctly is typical of the care taken in all Orr Felt departments. The result—felts superior by actual comparison—felts that will show you the true meaning of long life and thorough water removal. Next time, specify Orr Felts.

Orr Felt & Blanket Co.

PIQUA, OHIO

CARE in the selection of carbon black will help you obtain finer, more uniform results in the production of your black papers. Witco Carbon Blacks are in increasing demand by paper manufacturers because of the excellent results they give. They are available in a variety of types to meet a wide range of customers' requirements. Wishnick-Tumpeer service is backed by the resources of a modern research and testing laboratory where work is constantly being done to improve carbon black and facilitate its use for various purposes. Ask for further information; your inquiries will be given prompt attention.

WISHNICK-TUMPEER, INC.

Manufacturers WITCO *and Exporters*

New York, 295 Madison Avenue • Boston, 141 Milk Street • Chicago, Tribune Tower • Cleveland, 616 St. Clair Avenue, N. E. • Witco Affiliates: Witco Oil & Gas Company • The Pioneer Asphalt Company • Panhandle Carbon Company • Foreign Office, London, England.

No. 4 White Linens.	2.25	@	3.25
No. 1 White Cotton.	4.25	"	4.75
No. 2 White Cotton.	3.25	"	3.75
No. 3 White Cotton.	2.50	"	3.00
No. 4 White Cotton.	1.90	"	2.20
Extra Light Prints..	2.00	"	2.40
Ord. Light Prints...	1.75	"	2.15
Med. Light Prints...	1.55	"	1.95
Dutch Blue Cottons.	2.25	"	2.50
French Blue Linens.	3.00	"	—
Checks and Blues...	2.00	"	—
Linsey Garments....	1.90	"	2.00
Dark Cottons.....	1.50	"	1.60
Old Shopperies.....	1.30	"	1.45
New Shopperies.....	1.45	"	1.50
French Blues.....	2.25	"	2.50

Old Rope and Bagging

(Prices to Mill, f. o. b. N. Y.)

Gunny No. 1—			
Foreign	Nominal		
Domestic	4.15	@	4.25
Wool Tares, light....	2.50	"	2.75
Wool Tares, heavy..	2.50	"	2.75
Bright Bagging.....	3.15	"	3.30
Manila Rope—			
Foreign	5.75	"	6.00
Domestic	5.75	"	6.00
Jute Threads.....	2.75	"	3.00
Sisal Strings	2.10	"	2.35
Mixed Strings.....	1.10	"	1.20

Old Waste Papers

(F. o. b. New York)

Shavings—			
White Envelope Cuttings	3.10	@	3.25
Ordinary Hard White No. 1....	2.75	"	3.00
Soft White No. 1..	2.35	"	2.50
Soft White Extra..	2.70	"	2.85
Flat Stock—			
Stitchless	1.10	"	1.25
Overissue Mag.....	.90	"	1.00
Solid Flat Book...	.90	"	.95
Crumbled No. 1...	.70	"	.75
Ledger White Stock.	1.65	"	1.75
Ledger Stock Colored	1.20	"	1.30
Manila—			
New Env. Cut....	1.70	"	1.80
New Cuttings.....	1.80	"	1.90
Old Kraft Machine Compressed bales..	1.35	"	1.50
News—			
No. 1 White News	1.50	"	1.60
Strictly Overissue..	.96	"	1.00
Strictly Folded....	.65	"	—
Corrugated	.80	"	—
No. 1 Mixed Paper..	.57½	"	—

Twines

(F. o. b. Mill)

(Soft Fiber)

Coarse Polished—			
India	.19½	@	—
White Hemp	.19½	"	—
Fine Polished—			
Fine India.....	.22½	"	—
Unpolished—			
Box	.15¾	"	—
Paper Makers.....	.15½	"	—
Tube Rope.....	.16¾	"	—
Wall Paper.....	.19½	"	—
Wrapping	.19½	"	—
Soft Fiber Rope...	.17½	"	—
Cotton	.24	"	—

(Hard Fiber)

Medium Java.....	.12	"	—
Mex. Sisal.....	.11	"	—
Manila	.25	"	—

PHILADELPHIA

Domestic Rags (New)

(Price to Mill, f. o. b. Phila.)

Shirt Cuttings—			
New White No. 1.	.06½	@	.06¾
New White No. 2.	.03½	"	.04
Light Silesias.....	—	"	.04½
Silesias, No. 1....	—	"	.04
Black Silesias, soft	—	"	.03
New Unbleached..	.06¼	"	.06½
Washable Prints..	.02½	"	.03
Washable No. 1..	—	"	.01½
Blue Overall.....	.04	"	.04½
Cottons—According to grades—			
Washable shredding	—	"	.01½
Fancy Percales....	.03	"	.03¼
New Black Soft...	.02½	"	.02¾
New Light Seconds	—	"	.04
New Dark Seconds	—	"	1.50
Khaki Cuttings—			
No. 1 O. D.....	.03	"	.03¼
No. 2 Mixed.....	.02	"	.02¼
Corduroy	.01¼	"	.01½
New Canvas.....	.04½	"	.05
New Black Mixed.	—	"	.02¼

Domestic Rags (Old)

White No. 1—			
Repacked	3.00	@	3.50
Miscellaneous	2.75	"	3.00
Thirds and Blues—			
Miscellaneous	1.35	"	1.50
Repacked	1.55	"	1.65
Black Stockings (Export)	Nominal		
Roofing Stock—			
Foreign No. 1....	Nominal		
Domestic No. 1...	1.30	"	1.35
Domestic No. 2...	1.10	"	1.15
Roofing Bagging..	1.00	"	1.05

Bagging

(F. o. b. Phila.)

Gunny, No. 1—			
Foreign	3.25	@	3.75
Domestic	3.25	"	3.50
Manila Rope.....	—	"	5.50
Sisal Rope.....	2.00	"	2.25
Mixed Rope.....	.75	"	1.00
Scrap—			
No. 1.....	3.25	"	3.50
No. 2.....	—	"	1.50
Wool Tares, heavy..	3.75	"	4.00
No. 1 New Light Burlap	3.00	"	4.00
New Burlap Cuttings	3.25	"	3.50

Old Papers

(F. o. b. Phila.)

Shavings—			
Hard White Special	2.75	@	2.85
Hard White.....	2.50	"	2.60
No. 1 Soft White..	2.00	"	2.25
No. 2 White.....	1.85	"	1.90
No. 1 Mixed.....	1.00	"	1.20
Solid Ledger Stock..	1.90	"	2.00
Ledger Stock, white.	1.60	"	1.75
Ledger Stock, colored	1.30	"	1.40
No. 1 Books, heavy..	.95	"	1.00
Manila Cuttings.....	1.90	"	2.00
Print Manila.....	.60	"	.65
Container Manila....	.50	"	.55
Kraft Paper.....	1.40	"	1.45
No. 1 Mixed Paper..	.57½	"	—
Straw Board Chip...	.50	"	—
Binders Board Chip..	.50	"	—
Corrugated Board....	.80	"	—
Overissue News.....	.85	"	.90
Old Newspapers.....	.65	"	—

BOSTON

Old Papers

(F. o. b. Boston)

Shavings—			
No. 1 Hard White	3.15	@	3.25
No. 1 Soft White	2.50	"	2.75
No. 2 Mixed.....	.90	"	1.00
Solid Ledger Books..	2.00	"	2.10
Overissue Ledger Stock	1.75	"	2.00
White Ledger Stocks	1.50	"	1.65
Mixed Ledgers	1.25	"	—
No. 1 Heavy Books	1.10	"	1.20
No. 1 Books, Light..	.75	"	.85
Crumpled Stitchless Book Stock.....	1.15	"	1.20
Manila Env. Cuttings	3.00	"	3.25
Manila Envelope Cuttings, extra quality	2.75	"	3.00
White Blank News..	1.70	"	1.80
No. 1 Kraft.....	1.35	"	1.45
Extra No. 1 Kraft..	1.75	"	—
Mixed Papers.....	.57½	"	—
Print Manila.....	.70	"	—
Container Manila....	.65	"	.75
Old Newspapers.....	.65	"	—
Paper Wool Strings.	1.15	"	1.25
Overissue News.....	.65	"	.70
Box Board Chips....	.35	"	—
Corrugated boxes....	.82½	"	.85
Kraft corrugated boxes	1.25	"	1.40
New Kraft Corrugated Cuttings	2.00	"	2.25
Screening Wrappers.	.85	"	.90

Bagging

(F. o. b. Boston)

Gunny Bagging—			
Foreign	(nominal)		
Domestic	4.37½	@	4.62½
Sisal Rope.....	3.25	"	3.50
Mixed Rope.....	1.00	"	1.25
Transmission Rope—			
Foreign	(nominal)		
Domestic	2.75	"	3.00
Soft Jute Rope.....	4.75	"	5.00
Manila Rope—			
Foreign .....(nominal)			
Domestic	5.75	"	6.00
Jute Carpet Threads.	3.00	"	3.25
Bleachery Burlap....	7.50	"	8.00
Scrap Burlap—			
Foreign	(nominal)		
Domestic	3.25	"	3.75
Scrap Sisal.....	2.75	"	3.00
Scrap Sisal for Shredding	3.25	"	3.50
Wool Tares—			
Foreign	(nominal)		
Domestic	2.85	"	3.00
Aust. Wool Pouches.	3.75	"	4.00
New Burlap Cuttings	4.75	"	5.00
Heavy baling bagging	3.25	"	3.50
Paper Mill Bagging..	3.50	"	3.75
No. 2 Bagging.....	.75	"	.80

Domestic Rags (New)

(F. o. b. Boston)

Shirt Cuttings—			
New Light Prints.	—	@	.03
Fancy Percales....	.03¾	"	4.00
New White No. 1.	.06	"	.06¼
New Light Flannelettes	.03¾	"	4.00
Canton Flannel, Bleached	.06½	"	.06¾
Underwear Cutters, Bleached	.06¾	"	.06¾
Silesias No. 1.....	.04	"	.04¼
New Black Silesias..	4.00	"	—
Red Cotton Cuttings	.04	"	.05
Soft Unbleached....	.06	"	.06¼
Blue Cheviots.....	.04¼	"	.04½
Fancy	.01½	"	.01¾
Washable	.01½	"	.01¾
Cottons—According to Grades—			
Blue Overalls.....	.04	"	.04¼
New Black, Soft..	.03	@	.03½
Khaki Cuttings.....	.02	"	.02¼
O. D. Khaki.....	.02½	"	.03¼
Corduroy	.02	"	—
New Canvas.....	.05½	"	—
B. V. D. Cuttings...	.06	"	.06¼

Domestic Rags (Old)

(F. o. b. Boston)

White No. 1—			
Repacked	2.75	@	3.00
Miscellaneous	2.00	"	2.25
White No. 2—			
Repacked	1.90	"	2.00
Miscellaneous	2.00	"	2.25
Twos and Blues.....	2.00	"	2.25
Old Blue Overalls...	1.60	"	2.00
Thirds and Blues....	1.25	"	—
Miscellaneous	1.25	"	1.35
Black Stockings.....	3.50	"	4.00
Roofing Stock—			
No. 1.....	1.20	"	1.25
No. 2.....	.95	"	1.00
No. 3.....	.85	"	.95

Foreign Rags

(F. o. b. Boston)

Canvas .....(nominal)	
Dark Cottons.....(nominal)	
Dutch Blues.....(nominal)	
New Checks and Blues(nominal)	
Old Fustians.....(nominal)	
Old Linsey Garments..(nominal)	
New Silesias.....(nominal)	

CHICAGO

Waste Paper

(F. o. b. Chicago)

Shavings—			
No. 1 White Envelope Cuttings....	3.15	@	—
No. 1 Hard White	2.50	"	2.65
No. 1 Soft White.	2.00	"	2.20
Ledger and Writings	.85	"	.95
Solid Books.....	.83	"	—
Blanks	1.45	"	—
Kraits	1.40	@	1.50
New Kraft Cuts....	1.60	"	1.75
Overissue News.....	.60	"	—
Old Newspapers—			
No. 1 Folded News	.70	"	.80
No. 1 Mixed Paper	.55	"	.60
Roofing Stocks—			
No. 1.....	.95	"	1.00
No. 2.....	.85	"	.90

To Be Manager of Union Bag Mill

SAVANNAH, Ga., June 30, 1941—G. W. E. Nicholson has been appointed resident manager of the local Union Bag and Paper Corporation plant to succeed M. E. Cody, whose resignation became effective at the same time, it was announced by Union Bag officials. Mr. Cody has been resident manager of the plant for the past year and a half.

Until May of this year Mr. Nicholson has been in charge of the Panama City and Georgetown mills of the Southern Kraft Corporation, a position which he held for four and a half years.

For ten years previous to that time the new Union Bag manager was associated with the International Paper Company in charge of operations of a number of their Southern mills. He was connected previous to this time with the Bogalusa Paper Company as general superintendent of the plant at Bogalusa, La. He has had thirty years experience in the paper and pulp industry.

"Mr. Nicholson is taking over the responsibilities of management under favorable conditions," the Union Bag statement continued. "During the year and a half that Mr. Cody has been in charge of the Savannah mills the production has been measurably increased, and the efficiency of operations developed to a high degree."

Mr. Cody came to Savannah in September, 1939, succeeding James H. Allen as resident manager of the local plant. During his stay here he took an active part in local civic matters. He was named a director of the Union Bag Corporation in March, 1940.

Under his management the local plant has steadily increased in both production and capacity. Published profits and operations statements of the local organization have shown a steady increase under his management.